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ABSTRACT

Guidelines for use by school practitioners in assessing students' motivation to learn are presented. Most of the instruments reviewed and literature discussed pertain primarily to the academic motivation and achievement of students in kindergarten through grade 12. Most are paper-and-pencil, self-report, group-administered measures that can be given within an hour. Definitions of basic concepts, current issues for assessing motivation, and thoughts on the future of assessment of motivation are presented. Lengthy reviews of certain selected instruments are presented, along with shorter reviews of related instruments and criteria for selecting appropriate measures of motivation. The guide is designed to provide users with enough of a conceptual overview of motivation and an awareness of existing instruments to proceed in their own review and selection more efficiently and systematically. Appendices include reviews of motivation measures, multidimensional measures, and motivation-related measures; a checklist for selecting a motivation instrument; and lists of testing resources and pertinent bibliographies. (TJH)

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ASSESSING LEARNING MOTIVATION

A Consumer's Guide

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April 1988

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1. USES FOR THIS GUIDE

This guide is intended for practitioners in the schools. Although measuring "motivation to learn" might be appropriate in non-school settings as well, most of the instruments reviewed, and literature to be discussed, pertain primarily to academic motivation and achievement of students in grades K through 12.

This guide presents definitions of some basic concepts, current issues for assessing motivation, and some thoughts on the future of assessing motivation to learn. Lengthy reviews of certain selected instruments are presented, shorter reviews of related instruments, and criteria for selecting appropriate measures of motivation will be given. Users of this guide should be provided with enough of a conceptual overview of motivation and awareness of existing instruments that they can proceed in their own review and selection process more efficiently and systematically.

It was not possible to review *all* existing motivation or motivation-related instruments. Some subjective decisions were made regarding the age of the instrument, the quality and/or popularity of the instrument, and the content category of instruments which were reviewed in detail. Sufficient references, resources and evaluative criteria are presented to enable the user to expand the scope of this guide over time.

2. IMPORTANCE OF MEASURING MOTIVATION

There is sufficient evidence recently that learning motivation is linked to student achievement in a number of ways:

1. Many studies have shown a direct link between a student's level of motivation and school achievement, both present and future achievement (Brophy & Merrick, 1987; Lloyd & Barenblatt, 1984; Uguroglu & Walberg, 1983).

2. Certain teaching methods (styles) have been found to interact with motivation patterns, and thereby affect achievement (Alschuler, Tabor & McIntyre, 1975; Marshall, 1987; Meece & Blumenfeld, 1987; Whitmore, 1986).

3. Several studies have found that it is possible to modify (increase) a student's motivation to learn (Ames & Archer, 1987; Brophy & Merrick, 1987; Deci & Ryan, 1985).

3. DEFINITIONS

Intrinsic vs. Extrinsic Motivation (to learn)

Intrinsic motivation can be described as an inherent, internal drive or tendency to pursue tasks simply for the sake of pursuing them without any outside influence or push. Extrinsic motivation, on the other hand, involves motivation that is inspired by outside influences such as anticipated rewards or outside goal attainment (such as higher grades, for example). We will define the term "motivation to learn" as the tendency for a student to find (academic) activities meaningful or worthwhile. Such motivation may be inspired either internally (intrinsically) or externally (extrinsically) by instructional techniques to be described later in this guide.

Other Factors Related to Achievement Motivation

Several "moderating" variables have been found to be related to motivation in general and to learning in particular. At least four factors are commonly found in the literature to be related to motivation to learn:

(1) internal-external locus of control;

(2) self-concept;

(3) attitude inventories; and

(4) teaching-learning styles.

There are hundreds of assessment instruments which measure the above areas. Since this guide cannot possibly describe in detail each of these sets of instruments, I will focus primarily on those which measure motivation to learn but will briefly review a few of those instruments which often appear in the literature as being highly related to motivation.

Locus of Control

Locus of Control is defined as the extent to which a person perceives rewards as being a consequence of his own actions (internal locus of control) or whether the reward is perceived as a consequence of some external force such as chance, luck or fate (external locus of control). The relationship between locus of control and academic performance has been well documented in books by Phares (1976) and Lefcourt (1982). Students who have a high level of internal locus of control tend to be more intrinsically motivated to learn.

The most commonly found measure of locus of control as it relates to academic achievement situations is the Intellectual Achievement Responsibility Questionnaire (IAR) which is described and listed in a study by Crandall, Katkovsky and Crandall (1965). This instrument is also reviewed at length in Appendix A.

Self-Concept

Some components of self-concept that frequently appear in the motivation literature are physical, social, emotional and academic self-concept. Both locus of control and self-concept were described by Uguroglu and Walberg (1983) as "cognitive theories . . . that combine thought and feeling as determinants of behavior," and therefore should ideally be examined in any motivational study. Uguroglu and Walberg constructed a "multidimensional" motivation instrument which included a measure of achievement motivation, locus of control and different aspects of self-concept. This instrument was found to be better in predicting achievement than a single measure of motivation alone. The relationship between self-concept and school achievement is well documented in Purkey (1970). If one were attempting to predict future achievement of students, it would be reasonable to include some measure of self-concept as part of, or in addition to, a pure motivational measure. Self-concept measures are reviewed as "Motivation-Related" measures in Appendix A.

Attitude Inventories

Attitude inventories try to measure how well a student likes or dislikes something; in this case we might be interested in how well a student likes a particular subject in school, or school in general. Instruments which are designed to measure a student's intrinsic motivation to learn a school subject bear a close resemblance to measures of a student's *attitude* toward that subject. A student's motivation to study (learn) science is very much related to the student's likes or dislikes, enjoyment or non-enjoyment of scientific activities. Motivation to learn, being a function of both intrinsic and extrinsic motivation, by its very nature encompasses attitudes and affects toward learning. Brief descriptions of several attitude measures are located in Appendix A.

Teaching-Learning Styles

Learning styles may be defined as a student's preferred method of interacting with instructional materials. For example, a student may prefer to learn geometry through a programmed instruction booklet rather than directly interacting with a teacher. Some types of learning styles are drill and recitation, discussion, independent study, lecture, simulation, etc. There is a substantial body of literature, much of it cited in Cronbach and Snow (1977), which has demonstrated that learning is maximized with the proper teaching-learning style match.

In order to maximize *motivation to learn*, there should be a proper match between an individual student's *learning style* and the instructional techniques used (Alschuler, Tabor & McIntyre, 1975; Whitmore,1986; Marshall, 1987; Meece & Blumenfeld,1987). In the matching of instructional techniques to learning styles one may be concerned with a) tapping a student's existing intrinsic motivation in a particular subject area, or b) using extrinsic motivational techniques such as setting mastery levels in order to increase student performance. Some of these techniques are discussed in the above references and in the technical and users' manuals for the learning styles instruments. A brief description of a few selected learning styles instruments is included in Appendix A.

4. ASSESSMENT ISSUES

Is Motivation to Learn a Single Concept?

Can we measure a student's motivation to learn as a single concept, or is it necessary to measure several different concepts and combine such information to determine a student's motivational level? Some authors have claimed that their instrument measures a single concept such as "intrinsic motivation" (Lloyd and Barenblatt, 1984; Brophy & Merrick, 1987). Others have broken the concept of intrinsic motivation down further. For example, some have identified subcomponents of intrinsic motivation such as "intrinsic academic motivation" (Gottfried, 1986) or "ego involvement" versus "task involvement" (Nicholls, 1983). Others have examined even more components within the construct of intrinsic motivation such as curiosity/interest, independent mastery, preference for challenge, etc. (Harter, 1980) or persistence (Gottfried, 1986). Most authors do make a distinction between "intrinsic" and "extrinsic" motivation to learn, though these are usually regarded as opposite ends of the same motivation continuum. The apparent overlaps between motivation to learn, self-concept measures, locus of control and other attitudinal measures bring into question the unidimensionality of motivation as a separate unique concept that is independent of other things.

What is the Relationship Between Motivational Level and (Academic) Performance?

Does knowing a student's motivational level give us any additional information beyond commonly measured characteristics such as socioeconomic level, IQ or past performance to allow any better predictability of future academic performance? There are numerous factors which are correlated with academic achievement: locus of control, self-concept, attitudes, teaching-learning styles. The real question is how much can be gained toward predicting a student's performance by obtaining a measure of a student's motivational level?

Several studies have shown that a measure of (intrinsic) motivation is worth including in addition to these other characteristics because it improves the predictability of achievement (Uguroglu, Schiller & Walberg,1981; Uguroglu & Walberg, 1983; Lloyd & Barenblatt, 1984).

Lloyd and Barenblatt (1984) found a significant relationship between motivation level and achievement scores on a standardized test. In addition to motivation level, however, they found that socioeconomic status, IQ, sex and need for achievement were also significantly related to

achievement. Though each of these other factors were related to achievement scores, the inclusion of the motivation measure contributed significantly in addition to, and independent of, the other factors.

In the past few years several researchers have also begun to study the effects of instructional manipulation on *extrinsic* motivation of students and their academic performance (Ames 1987; Brophy & Merrick, 1987; Harter, 1981). Brophy and Merrick stated that motivational strategies on the part of the teacher differ from intrinsic motivation and that use of such strategies can significantly affect student achievement. They found that "systematic teacher implementation of strategies for motivating students to learn produce improvements primarily in student achievement rather than in measures of student motivation" (especially since most conventional measures are (affective) measures of intrinsic motivation. Brophy and Merrick make a case for instructors planning specific motivational strategies in advance, thereby being able to capitalize on students' extrinsic, "more cognitive" motives and affecting student performance. The results of their study provides promise that *both* motivational level and achievement can be changed and demonstrates the significant relationship between the two.

Hence, the answer to previous questions appears to be that, yes, motivation to learn does have an impact on achievement and can be manipulated to some extent by the teacher.

Is a Student's Level of Motivation Changeable?

There are some studies which indicate that a student's level of motivation can be altered (increased) through instructional intervention (Harter, 1981; Brophy & Merrick, 1987). Harter found that as students progressed from lower to upper grades they tended to go from a mastery/curiosity mode (internally reinforced) to one of doing assignments simply to meet teacher expectations or get good grades. At the same time students were internalizing their own judgments of whether or not they were successful. This clearly demonstrates that change in motivational level may be due to the number of years in school.

There are several other studies which show that there are programs and strategies designed to increase motivation level (Ames, 1987; Ames & Archer, 1987; Brophy & Merrick, 1987; Marshall, 1987). Many of these studies have used systematic teaching strategies which complement students' extrinsic motives (such as praise, points or grades) in hopes that, in the long run, students will become more intrinsically motivated. Brophy and Merrick (1987) claims that it is quite possible to effect (increase) a student's intrinsic motivation with certain teaching strategies. Ames & Archer (1987) and Marshall (1987) both speak of orienting students to a mastery perspective in which more effective learning strategies result when the student internalizes learning purposes, responsibilities and processes. Most all of the aforementioned studies showed significant changes in student achievement and several showed significant, measurable differences in level of student motivation. The current research position seems to take the stance that, yes, intrinsic motivation to learn *can* be increased through certain teaching and environmental strategies which are yet to be totally identified.

Is Motivation to Learn More Affective or Cognitive in Nature?

Emotions (affect), like drives or intrinsic needs, provide information that may lead to the formation of motives and to subsequent behaviors. Deci and Ryan (1985) picture intrinsic motivation as being an internal "drive" for competence and self-determination. They say that "emotions can *energize* self-determining or non-self-determining behaviors", thereby sometimes being at the base of intrinsic motivation. Self-determined behavior is energized by the motive that emerges from the emotion and the desire for future satisfaction. Strong emotions may "break into" intrinsically motivated behaviors. Early instruments (and many of those even today) primarily measured affective dimensions of motivation. Even today McCombs (1987)

states in a motivation research paper:" the role of affective variables in autonomous learning is to further motivate one's inherent tendencies to learn and develop by helping confirm that personal needs and goals are being met.

At the annual conference of the American Educational Research Association (AERA) in 1987 it appeared that recent emphasis was being given to "cognitive" theories for motivation to learn. A recent book on motivation by Ames & Ames (1987) has entire chapters devoted to discussing "cognitive goal structures" for motivation. Ames (1987) states: "enhancing motivation involves changing how students think -- getting students to adopt different achievement goals, attend to different types of information, process information differently, and interpret performance feedback differently." Brophy and Merrick (1987) seem to create their own definition of "motivation to learn" when they stated in their research paper that: "...these results suggest that student motivation to learn is even more different from (more cognitive, less affective) intrinsic motivation...". Even Deci and Ryan (1985) who spoke of the interrelationships between affect and motivation described a cognitive evaluation theory in this same paper as " perceived causality and perceived competence that affect people's self-determination, thereby causing changes in intrinsic motivation."

So it seems that the concept of motivation to learn is composed of *both* cognitive and affective components. Which is more important, or which is the greatest influence on motivation, is still very much under debate and a leading candidate for future research. The findings above would imply that one cannot simply ignore affective "signals" of motivation in the classroom and totally rely upon pencil-and-paper assessments of motivation level.

Are Pencil-and-Paper Assessments of Motivation Valid?

All of the studies previously described involved assessing a student's motivation level through administration of a paper-and-pencil device. In addition to demonstrating positive relationships with student achievement, many of these studies reported validity information for the instruments used (much of this information is contained in Appendixes A and B). Though the levels of validity coefficients are not as high as some achievement or ability measures, they are high enough to demonstrate a need for being considered. This should not preclude, however, obtaining other measures of motivation level such as observations or classroom behaviors.

5. STATE-OF-THE-ART

After having reviewed dozens of motivation measures, the following generalizations may be made concerning the current quality and status of these instruments.

Content

Motivation instruments come in a variety of types -- those that measure a single type of motivation (usually academic), those that measure multiple kinds of motivation, and those that measure personality characteristics which are highly correlated with motivation. Depending upon the purpose for which one is wishing to measure motivation level, any one of these formats might be chosen. Most of these self-report instruments have Likert-scaled items where a person usually chooses a characteristic or activity that is "most like him/her" or that they would most like being engaged in. The kinds of items on such instruments require a totally honest response on the part of the test-taker and, of course, are very susceptible to encouraging socially-desirable responses. A few of the instruments discussed in this document would be useful in obtaining a measure of motivation to learn "in general", however the primary focus of this document is on motivation to learn school-related topics or subjects.

Grade Levels

This guide specifically focuses on instruments that assess motivation to learn for students in grades 1 through 12, though a few of the measures are also appropriate for adult populations. Some of the instruments discussed are useful in measuring "academic" motivation for children as young as pre-school (as low as age 3, in fact), and might be useful toward predicting future success or failure in the school setting.

Uses

Most of the instruments reviewed were concerned with measuring motivation for the purpose of predicting future achievement (success) in school subjects, or school in general. A few studies would use the measure as a selection tool for school subjects or placement within a curriculum sequence, while others used the motivation data for "non-academic" purposes such as placement into occupational fields. In many cases, these instruments were used as auxiliary measures, along with a measure of achievement, for the purpose of looking at the discrepancy between the two (e.g., a student with high motivation yet low achievement may require a different intervention than one with low motivation and low achievement). In such circumstances it may be desirable to obtain a measure of a student's motivation level simply to try to alter it, if necessary.

Validity

The somewhat subjective assessments of validity for each of the instruments are summarized in the table within Appendix B as well as in the lengthier reviews of Appendix A. Some of the criteria which determined these assessments are contained within the checklist for selecting a motivation instrument in Appendix D.

Generally, the investigations of instrument validity were the weakest discussions in the technical manuals and research studies involving these instruments. Not only did there seem to be insufficient depth to the investigations of instrument validity, but for those studies which made attempts at obtaining validity coefficients, these were most often quite low ($r < .50$) -- lower than most ability tests and many other personality instruments. There was a handful of instruments for which validity was rather thoroughly investigated, and for which validity coefficients were reasonably satisfactory; these instruments have the long reviews in Appendix A.

Reliability

Reliability of the instruments is reported in Appendices A and B, with some reliability criteria being given in Appendix D.

Over half of the instruments reviewed reported some type of reliability coefficient, usually an internal consistency measure of one kind or another. Many, but not most, of the manuals reported stability coefficients, usually spanning a time period of one or two months. Generally it can be said, however, that the reliability (and stability) coefficients were somewhat lower than would be desirable for achievement or ability tests -- a range of coefficients between .60 and .70 was quite common. There are many possible reasons why such coefficients tended to be low; one possible explanation is the issue of determining the dimensionality of these instruments. Another possibility is that motivation level may not be very stable from one testing time to the next.

Usability

Most of the instruments are paper-and-pencil, self-report, group-administered measures which can be given within an hour's period of time. Many of them, however, require machine-scoring in order to get proper interpretation of the results. A majority of these instruments *do not* have national norms against which one may compare a student's performance, so it is often necessary to rely upon local comparisons of students' performance. Several instruments report "norms" (average scores) for specific subpopulations, namely certain grades and/or parts of the country, so it may be that such subpopulation norms are totally appropriate for some uses. In most cases, however, the author(s) of the instruments are quite willing to assist users in the interpretation and uses of the instruments (see authors and addresses in Appendix B).

Summary

The more recent research publications on motivation to learn indicate that there is a need for higher quality investigation of instrument validity as well as discriminant validity studies, where several measures may be compared in an effort to determine differences in motivation constructs. Until such research is completed, it is questionable just how much additional information might be provided by many of these instruments, or how reliable some of these results would be. For most of these measures, it would be wise to locally accumulate data over a period of time before basing any critical decisions on the derived results. Appendices A and B provide reviews of over 30 such instruments. Included within these reviews are evaluative data and comments on instrument quality.

6. FUTURES

A summary of the more recent literature would indicate that future research on motivation to learn should, and seems to be, oriented toward:

- identification of the dimensions of motivation (Gottfried,1986; Nicholls,1983; Rubenstein,1986);
- investigation of the differences and similarities among the existing scales (e.g., need achievement vs. intrinsic motivation vs. task-dependent motivation); and
- determination of the ability for motivation measures to predict practical characteristics such as academic achievement, IQ, etc. (Ames & Ames,1984; Lloyd & Barenblatt,1984; Rubenstein,1986; Uguroglu & Walberg, 1983).

It looks hopeful that future research may help simplify the process of selecting an instrument for a particular practical purpose. For example, an instrument could help:

- predict future school achievement, above and beyond a measure of ability. In such a case one may want to administer one of the instruments listed in the **Primarily Motivation Measures** section of Appendix A; or
- measure motivation toward school (in general), in which case it would most likely be inappropriate to administer the My Interest in Science scale or the Learning Styles Inventory. More appropriate measures might be the School Attitude Measure, the Student Motivation Questionnaire or the School Motivation Analysis Test.

7. How to Select a Motivation Measure

A specific checklist of characteristics to examine in selecting a measure of motivation to learn is included in Appendix D. This section simply describes a few procedures to engage in while in the *process* of selecting a measure.

Step 1 Decide on Content and Purpose

The first step is to decide what aspects of motivation you wish to measure. A part of this decision involves how you plan to use the results from the measurement. If the motivation measure is simply supplementary to other measures, then a motivation-related or multidimensional instrument might suffice. If the primary intent is to predict academic achievement, a measure of intrinsic (academic) motivation might be most appropriate. If the purpose is diagnostic, then one must select an instrument that will provide the desired information.

Appendices A and B will assist you in narrowing down which instruments you might want to more thoroughly review. After choosing 3-5 potential candidates, a more thorough item-by-item review of the instruments and their technical guides should finalize the decision.

Step 2 Review at Least Three Instruments

After having narrowed down the number of instruments based upon measurement purpose and content of several instruments, choose at least three top candidates for more thorough review. Appendices A and B provide some initial information on several instruments that should allow for some narrowing-down of the field that needs to be reviewed. Notice that only *a portion* of the instruments briefly described in Appendix B have a lengthier review in Appendix A; do not simply rely upon the longer reviews to select your final pool of instruments. At this stage of the selection process you can now weigh the instruments' reliabilities, validities, interpretability, etc. as criteria for narrowing down the field.

Step 3 Review the Instruments in Detail

After having finally selected three or more instruments for more thorough review, the checklist criteria of Appendix D can be used for comparison of the instruments. If necessary, a total can be obtained across the questions or priority weights can be given to the various sections of the checklist. In some cases it may be necessary or desirable to go back into the original listing of tests in Appendix D if all documentation (technical manuals,etc.) reveals that no one of the selected instruments is entirely satisfactory.

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APPENDIX A

REVIEWS OF MOTIVATION MEASURES

The reviews within this appendix have been classified according to instruments which we feel belong to the categories of:

(1) **Primarily Motivation Measures:** Contain only one scale measuring motivation or, if multiple scales, each resultant scale score can be interpreted as a motivation construct.

(2) **Multidimensional Measures:** Contain multiple scales of which one or more is a *direct* measure of motivation; the other scales usually measure motivation-related constructs.

(3) **Motivation-Related Measures:** Contain one or more scales, none of which is a *direct* measure of motivation but have been shown to be correlated with a motivation construct.

In each of the three sections above the instruments are arranged alphabetically within the a) "long" reviews and within the b) briefer abstractions of "other" instruments in each category. Long reviews were conducted for the major instruments, in our opinion, in each of these categories; briefer reviews are given for additional, less major instruments.

A summary table containing descriptive characteristics for *all* of the instruments described in this guide appears in Appendix B.

The sectional headings within this appendix are:

PRIMARILY MOTIVATION MEASURES

- OTHER PRIMARILY MOTIVATION MEASURES

MULTIDIMENSIONAL MEASURES

- OTHER MULTIDIMENSIONAL MEASURES

MOTIVATION-RELATED MEASURES

- OTHER MOTIVATION-RELATED MEASURES

PRIMARILY MOTIVATION MEASURES

Title of Instrument: A Scale of Intrinsic versus Extrinsic Orientation in the Classroom (1981)

Author: Susan Harter, Ph.D.

Description: This instrument was developed to examine the degree to which a child's motivation to learn is determined by an intrinsic interest in learning and mastery or by a more extrinsic orientation for approval, rewards, etc.. A combination of forced-choice and Likert-type responses require the student to choose an intrinsic or extrinsic response and then answer along a continuum the degree with which the statement is "sort of true for me" or "really true for me." There is only one level and one form of this instrument, and it is primarily to be directed at students in grades three through nine. The authors give the following purposes which guided the development of this self-report instrument:

1. to identify the possible *components* of intrinsic motivation, rather than treat it as a global construct

2. to be sensitive to *extrinsic* motivation so that the instrument could examine relative strengths of each orientation

3. to have a measure which would be appropriate across a number of age levels in order to assess developmental change

4. to have a measure that would be psychologically meaningful as well as psychometrically sound

5. to be able to administer the instrument to groups of children as well as to individuals

Author's Description of Subtests: The primary question that the authors feel may be answered by the administration of this instrument is: "to what degree is a child's motivation for classroom learning determined by his or her intrinsic interest in learning and mastery, curiosity, preference for challenge in contrast to a more extrinsic orientation in which a child is motivated to obtain teacher approval, grades, etc." The following subscales are tested and reported in this instrument:

A. Preference for Challenge vs. Preference for Easy Work

B. Curiosity/Interest vs. Pleasing the Teacher/Getting Grades

C. Independent Mastery vs. Dependence on the Teacher

D. Independent Judgment vs. Reliance on Teacher Judgment

E. Internal Criteria vs. External Criteria

Score Interpretation: The author recommends not attempting to interpret a total score but rather look at the *patterns* of subscale scores with respect to one another. They give examples of the implications for the interpretation of individual student profiles and how these profile patterns may be used to tailor instruction to individual students.

Reliability: Internal consistency reliabilities (KR-20) were calculated on each of the scales separately and ranged from .68 to .84 for rather small samples of students and only six items per scale. We judge these reliabilities to be quite adequate considering the sample sizes.

Validity: The author reports "factorial validity" of the scales as well as the intercorrelations between scales but admits that the results do not entirely support the independence of all subscales. Construct and predictive validity is still being investigated, though some results are reported for certain of the subscales.

Practical Considerations: The scale may be administered individually or in group form in about 30-40 minutes. The items are to be hand-tabulated and transferred to a data coding sheet for further analysis and interpretation. Additional forms are provided for comparing and interpreting individual student profiles. If one were to be tabulating and comparing these student profile scores on a regular basis, it would not be difficult to develop a microcomputer scoring and comparison data base on an ongoing basis.

Availability: Susan Harter, Ph.D., University of Denver, 2040 S. York Street, Denver, Colorado 80208

Comments: The psychological foundation of the instrument and the objectives behind the various subscales represent worthy goals to investigate, e.g., the identification of the components for intrinsic motivation. Much work has to be done, however, in the validation of these subscales and in the examination of this instrument's relationship to other motivational instruments currently existing.

Title of Instrument: Children's Academic Intrinsic Motivation Inventory (CAIMI) (1986)

Author: Adele Eskeles Gottfried, Ph.D.

Description: This instrument was developed to measure intrinsic academic motivation in the subject areas of reading, mathematics, social studies, science and school learning in general for children in grades 4 through 8. The author claims that this instrument provides a means for differentiating motivation from achievement and ability, within and between the subject areas represented. She says that some of the major uses for the general population, as well as with students with poor school orientation, would be for psychological diagnoses, counselling and for instructional program planning and evaluation.

Author's Description of Subtests: A student's level of intrinsic motivation is interpreted in a norm-referenced fashion in the following areas:

- reading
- mathematics
- social studies
- science
- general

There are five scales within each of these subject areas which measure a student's:

- enjoyment of learning
- orientation toward mastery
- curiosity
- persistence
- learning of challenging, difficult and novel tasks

Score Interpretation: Norm-referenced interpretation of scale scores are presented in a very clear fashion using case studies as examples. Student scores on and between each of the five scales may be clearly interpreted through the profile information and norms provided. Scores are reported for each subscale and comparisons between each scale score and the general scale score are encouraged and interpreted within the technical manual.

Reliability: Internal consistency reliabilities (coefficient alphas) ranged from .80 to .93 for two separate studies based upon 260 and 166 students, respectively. Considering the relatively small sample sizes and number of items in each scale, these coefficients indicate extremely high homogeneity of responses and excellent reliability within each scale.

Test-retest (stability) coefficients were calculated over a two month interval and ranged from .69 to .75 across the scales for a subsample of 138 students. Considering the time interval and sample sizes for the test-retest coefficients, this would indicate quite satisfactory reliability for these subscales.

Validity: Construct validity was demonstrated through correlations between the CAIMI scale scores and students' achievement, perceptions of their own competence and levels of anxiety. Five hypotheses were advanced for confirmation in order to determine the convergent and discriminant validity of the subscales:

- academic intrinsic motivation would be positively related to school achievement
- academic intrinsic motivation would be negatively related to student anxiety level

- academic intrinsic motivation would be positively related to children's perceptions of their academic competence
- academic intrinsic motivation would be positively related to teachers' perceptions of students' academic intrinsic motivation
- higher academic intrinsic motivation would be associated with lower extrinsic orientation

In support of the above hypotheses, criterion-related validity studies are reported as well as some degree of predictive validity, for example, correlations with grades and achievement test scores. Across the various criteria the absolute value of the validity correlations (coefficients) ranged from about .40 to .62, comparable to most validity coefficients for many existing standardized achievement tests. Though these validity coefficients are not numerically astounding in size, for instruments of this nature it is quite good for them to be comparable to those of standardized achievement tests.

Practical Considerations: Administration time for this test is 20-30 minutes for an individual to about one hour for groups. Usually the instructions are read aloud, but for highly capable students an unmonitored administration is possible. The characteristics of the (relatively small) norming sample(s) are clearly documented in the manual and norms tables are provided by subscales. The scores, however, should be interpreted relative to the norming sample characteristics and should not be considered nationally representative.

Availability: Psychological Assessment Resources, Inc., P.O. Box 998, Odessa, Florida 33556

Comments: The interpretive manual is very clearly written for both the technical user and lay teacher or counselor. Directions for future research are provided in the manual and an extensive set of background references are given.

Title of Instrument: Intrinsic Intellectual Motivation Scale (1984)

Authors: J. Lloyd and L. Barenblatt

Description: A 44-item Likert-type scale that measures intrinsic intellectual motivation (IIM) among secondary school students, which is defined as the tendency to pursue intellectual tasks for their own sakes. The authors describe the resulting measure of intrinsic motivation as: Intrinsic intellectual motivation -- " an emotional response to the content and processes of intellectual learning." This motivation is thought to contribute to academic achievement because the learning process is supported by immediate *intrinsic* reward.

Authors' Description of Subtests: There are no subtests; this measure consists of one scale score.

Score Interpretation: Scores from this instrument can be interpreted as "pure" intrinsic motivation toward intellectual learning in general, and not directed toward any subject content in particular. The scores apparently represent a motivation dimension that is independent of need achievement (at least for the instrument they used to measure need achievement) and add to predictability of academic achievement above and beyond IQ, SES, and other variables included in their study and that of Bergin (1987).

Reliability: Cronbach alpha coefficients of internal consistency for this instrument were calculated from two samples of tenth grade students; .85 for a sample of 100 students, and .89 for another sample of 100 students. Considering these sample sizes and the nature of motivation measurement, these reliabilities are *quite respectable*.

Validity: No direct validity coefficients are reported. Some correlational data are reported in the Lloyd & Barenblatt (1984) study and in Bergin's (1987) study which demonstrate differences between this construct and need achievement, self-efficacy and related constructs, so the beginnings of construct and discriminant validity are here. Much validation work is still needed, however, for this to be a practical, accepted instrument.

Practical Considerations: The IIM is only 44 likert-type items which can be easily administered in a group situation in under 30 minutes. It would not be difficult to include this instrument in with standardized test administrations in order to look at the relationship between intrinsic intellectual (academic) motivation and achievement levels.

Availability: Dr. Lloyd Barenblatt, Dept. of Organizational & Administrative Studies, New York University, 300 East Building, New York, N.Y.10003

Comments: This instrument is rather unusual in terms of its unidimensional construct of intrinsic intellectual motivation, and the studies that have used this instrument to demonstrate its significant correlation with achievement yet independence from need achievement and other related variables. What seem to be strongly needed are some good construct validity studies which will discriminate and differentiate this construct from other existing motivation constructs (instruments) on the market. We feel there is some strong *potential* here.

Title of Instrument: Opinion Reaction Inventory: A Measure of Achievement Motivation (1975)

Authors: John C. Ory and John P. Poggio

Description: This instrument is a self report measure with 106 Likert-type items that measures achievement motivation among secondary school students and adults. Achievement motivation is defined through the subcategories of: perseverance, success probability, personal characteristics, parental attributes, sex differences, choice behavior, reaction to success/failure and accomplishments. Though this instrument is intended as an adult measure of achievement motivation, it appears to be appropriate, in some circumstances, for upper-level secondary students as well.

Authors' Description of Subtests: Items were grouped and written for the eight theoretical categories, however all statistical data for this instrument are reported for 14 factors which resulted from a principle components analysis of the standardization data. The authors suggest examining reliability and validity of these 14 factors separately rather than the entire instrument or the original 8 factors. The 14 factors (subtests) which the authors discuss in detail are:

-Task Orientation (n=14): type of activity or task you would choose if given choice

-Perseverance (n=8): persistence or determination to complete tasks

-Parental Affection (n=10): recollection and judgments of interaction with parents

-Fear of Failure (n=10): reflects elements of self doubt and doubt and uncertainty- Social Acceptance (n=9): reflects the social needs of the respondent

-Reaction to Success/Failure (n=7): identify subject's behavior following success or failure

-Future Orientation (n=7): reflects the temporal attitude or orientation

-Involvement (n=7): the commitment or involvement to activities tasks

-Parental Restriction (n=5): judgment about amount of childhood restriction

-Test-Taking Behavior (n=3): reflects subject's behavior during testing conditions

-Competitiveness (n=6): level of need for competition

-Independence (n=5): orientation to working alone or in groups

-Rigidity (n=5): indicates flexibility in relation to life circumstances

-Anticipatory Behavior (n=2): how the subject behaves in preparation for the future

Score Interpretation: Achievement motivation is to be interpreted as a set of more specific traits (the 14 defined above) rather than as a unidimensional construct. The authors cite this research, as well as an extensive review of the literature, supporting the validity of these factors as being components of the larger concept of achievement motivation. Reliability and validity should be examined and scores reported for these separate components of achievement motivation.

Reliability: Coefficients of stability and internal consistency were estimated separately for the 14 factors. Stability was computed over a six week period on a sample of 92 subjects. Internal consistency was computed with 152 subjects using Cronbach's alpha. The stability coefficients

ranged from .32 to .80 with an average of about .60; internal consistencies ranged from about .36 to .73 with an average around .50. These are generally unacceptably low stability and internal consistency coefficients. The authors suggest that this instrument be considered preliminary and somewhat experimental.

Validity: No validity or norming information is reported.

Practical Considerations: Administration time is 30-40 minutes. The instrument itself requires little or no training to administer; interpretation of the results would require considerable research and technical sophistication.

Availability: Dr. John C. Ory, Measurement & Evaluation Division, 307 Engineering Hall, 1308 W. Green, Urbana, Illinois 61801

Comments: The research and concepts behind this instrument were quite thorough and comprehensive. In its current state, however, it should be considered a pilot instrument due to the reliability of the individual scales (factors). We would suggest the use and modification of this instrument for projects that have sufficient research expertise available to thoroughly examine reliability and validity of these components of achievement motivation.

Title of Instrument: Student Motivation Questionnaire (1987)

Author: Dr. Jere Brophy

Description: A 46-item questionnaire which contains items that measure expectancy aspects of motivation, intrinsic motivation and motivation to learn among students in grades 3 through 9. There is also a separate section which is designed to measure students' perceptions of the teacher's enthusiasm toward and methods of teaching social studies. The item types vary across the three sections of the questionnaire, from forced choice/Likert type (ala Harter (1981)) to a ranking of topics in order of their importance to the student.

Author's Description of Subtests: The items are divided into three questionnaires because three different item formats are used, but all 46 items are treated as part of a single instrument for analysis purposes. The layout of the instrument is as follows:

Questionnaire 1	Questionnaire 2	Questionnaire 3
17 items	27 items	2 items
forced choice	Likert	ranking
"really true for me"	"very true"	rank classes
"sort of true for me"	"sort of true"	on interest
	"not very true"	value,importance
	"not true at all"	

A content analysis of the items and a factor analysis of some pilot data support the existence of four factors spread across the 46 items:

-motivation to learn factor: items which tap the students' concern about making sure they understand what they are learning and their interest in learning for its own sake rather than to meet school requirements

-perception of the teacher: items asking if the teacher seems to enjoy teaching, makes material interesting, etc.

-student conscientiousness and good work habits: items asking if they turn in assignments on time, get started early rather than waiting, etc.

-perceptions of the interest value and importance of social studies: items which measure student enjoyment of the class, finding the material interesting, believes that the content is important, etc.

Score Interpretation: The author identifies the precise items which make up the four factors listed above. He suggests that interpretation of these scores be according to these four factors. In communication with the author, he has stated that, at this time, this instrument should be regarded and interpreted as a research instrument and not as a diagnostic tool. Reliability and validity should be determined for each of the four factors separately in any future studies. According to the author, the emphasis of this instrument thus far has been:

- on student perceptions of teacher behavior in the classroom
- on students' intrinsic motivation during social studies classes
- on students' motivation to learn social studies content

- on some other aspects of motivation (expectancies for success, self-concept of ability, etc.) should researchers wish to investigate these as well in their study.

Reliability: Raw scores for the questionnaire as a whole and for the clusters of items corresponding to the four factors were computed for pre- and post- treatment data and correlated to obtain stability coefficients. The stability coefficients were .65 for total scores and ranged between .45 and .60 for the four factor-based subscores. Considering that a time period of four months elapsed between these testing periods, stability coefficients at this level are quite satisfactory and do demonstrate existence and stability of the four subscore factors. No other reliabilities have been calculated, however, and any future study using this instrument should consider thoroughly re-investigating all reliabilities of the subscales.

Validity: A principal components factor analysis was run on the data at pre- and post-treatment times, revealing the existence of the same four factors. Also, a preliminary content analysis prior to the administrations had validated the matching of items to the four factors. Beyond this, no formal validity coefficients or analyses are reported.

Practical Considerations: Questionnaire I can be administered in 20 minutes on the first day and questionnaires II and III together in 20 minutes on a second day. Group administration was used with the junior high students studied in the research; other methods might be needed for younger students. Interpretation of the results should be through someone who is quite familiar with the instrument and the relevant subscales. Interpretations should be made relative to other students in the testing sample, and with caution, due to the current experimental nature of this instrument.

Availability: Dr. Jere Brophy, Institute for Research on Teaching,252 Erickson Hall, Michigan State University, East Lansing, MI 48824-1034

Comments: The potential of this instrument to measure both intrinsic motivation and motivation to learn as separate concepts is unique among those that we have reviewed. Its applied subject area could rather easily be modified and adapted to other subject areas as well, though many of the items are generic enough to carry over as they exist. The potential applications of this instrument are great given sufficient research over the next few years.

OTHER PRIMARILY MOTIVATION MEASURES

Aberdeen Academic Motivation Inventory (1967) by N.J. Entwistle is a 24-item "yes-no" questionnaire which asks students in secondary school to respond to their favorite (academic) activities. This instrument purports to measure "academic motivation" as opposed to "achievement motivation" in junior high and secondary school students. Concurrent validity and test-retest reliability (0.83) are reported in a technical paper by Entwistle (1968) and appear to be quite satisfactory. This is a very short, easily administered measure of specific *academic* motivation.

Children's Achievement Motivation Scale (undated) by Bernard Weiner is a short, 20-item forced-choice instrument designed to measure achievement motivation of children ages 6 to 14 years. Empirical findings with this instrument have been shown to differentiate individuals high and low in achievement need. These items tap the kind of affect (hope or fear), the direction of behavior (intermediate vs. easy or difficult) expressed in achievement situations. No information on reliability or validity could be found.

JIM Scale (1965) by J.R. Frymier is an 80-item, four-point scale which provides a measure of a student's motivation toward school in general for students in grades 7 through 12. The author of this instrument claims a strong relationship between this measure and achievement in school. Substantial validation of the instrument was completed in 1965, however little research with this instrument has been cited since then. Due to its age, it would be necessary to locally validate scores on this measure.

Ontario Test of Intrinsic Motivation (1971) by H.I. Day consists of 110 true-false items which measure intrinsic curiosity (motivation) toward academic and vocational activities. This scale is highly correlated with Harter's (1981) Scale of Intrinsic vs. Extrinsic Orientation in the Classroom, however its validity and reliability have been less well investigated.

PPP School Sentence Form (1973) by Eleanor L. Levine is a 20-item sentence completion form which elicits information concerning children's (ages 6-12) feelings about school-related topics. It provides information on: areas of positive and negative motivation, feelings about school topics, peer topics and general self-concept. Interpretation information is clearly presented for the items within five subscales. No validity or reliability information was found.

Revised Children's Reactive Curiosity Scale (1982) by B.B. Henderson, S.R. Gold and M.T. McCord is a revision of the Children's Reactive Curiosity Scale (1964) by R.K. Penney and B. McCann. This is a 40-item, four-point scale which was revised in order to reduce the influence of social desirability and other response sets. This scale measures an openness to new experiences and the need for varied stimulation particular to *leisure-time activities*. It is a measure of intrinsic motivation for learning which continues beyond the classroom.

MULTIDIMENSIONAL MEASURES

Title of Instrument: My Education in Science (1983)

Authors: Margaret E. Uguroglu and Herbert J. Walberg

Description: This is a multidimensional instrument which is composed of seven subscales: motivation, ability, time-on-task, instructional quality, socio-psychological climate, educational stimulation, and peer group relations. Each of the subscales contains approximately 10 Likert-style items scaled from "strongly agree" to "strongly disagree." Using a combination of these seven scale scores, it is hypothesized that one can more accurately predict achievement (of students in grades 5-8) than with a unidimensional instrument which measures motivation alone.

Authors' Description of Subtests: A prior study by the authors in 1981 had shown motivation to be a multidimensional construct; hence they incorporated achievement motivation, locus of control and physical, social, emotional and academic self-concept into the motivation subscale of this instrument. Additionally, the six other subscales of this instrument (mentioned above) had, in previous research, been found to "predict with law-like regularity cognitive, affective, and behavioral learning outcomes and gain." The purpose of these additional scales, then, is to be able to estimate achievement and calculate the various relationships between motivation and achievement for a group of student in Science classes.

Score Interpretation: Rather than having a high level of reliability for each of the subscales, this instrument focuses on the predictive validity of the combination of all subscale information; individual subscale scores should be interpreted with great caution. The scores from this instrument are primarily intended to be used for achievement prediction and researching the relationships between motivation, achievement and the six other factors included as subscales.

Reliability: The internal consistency for the entire instrument is said to be around .65 (for 61 items), however the authors recommend examining the reliabilities within each of the subscales separately. In doing so, they report maximum (test-retest) reliabilities of about .50-.60 and minimum reliabilities between .19 and .36. The test-retest reliability for the entire instrument is about .56 (time span between test offerings was not mentioned). These are not terribly impressive reliability figures for the entire instrument or for the subscales. The reliability for the instrument as a whole is low most likely due to the multidimensionality characteristic; for the subscales because of the limited number of items in each. Further research into increasing the number of items in certain scales, or reducing the number of subscales needs to be done before this instrument has much practical potential.

Validity: Though partial correlations and predictive percentages of "variance accounted for" are discussed in this technical study, validity coefficients (predictive or otherwise) per se are not reported. Correlations between achievement, motivation and the other factors are reported in detail. The potential strengths of this instrument lie in its ability to predict achievement rather well.

Practical Considerations: The multidimensionality concept of this instrument and the other factors being measured in addition to motivation seem to be worthy of further investigation -- in a research sense. However, the current instrument suffers from a lack of technical documentation at the time and should be piloted (and researched) before practical adoption.

Availability: Margaret E. Uguroglu, Devry, Inc.,2201 W. Howard, Evanston, Illinois 60202

Comments: See Practical Considerations above.

Title of Instrument: Primary Academic Sentiment Scale (PASS) (1968)

Author: Glen Robbins Thompson, PhD

Description: The PASS was designed primarily to obtain objective information about a child's motivation for learning. It contains 38 items in which the youngster is asked to put an "X" on the picture which contains what she/he would "like to do best." There are also some items which give indication of a child's level of maturity and parental dependency. It was developed to assess the effectiveness of preschool and early school programs designed to increase motivation for learning and levels of maturity and independence.

Author's Description of Subtests: The PASS yields two scores, a Sentiment Quotient and a Dependency Stanine, both of which are based upon age norms. The author feels that this instrument could be helpful in making placement decisions. For example, children who score low on the Sentiment Quotient might be assigned to programs designed specifically to increase motivation for learning. Children who score low on reading readiness might be assigned to programs designed to accelerate readiness. The PASS could then be described as a combination of a motivation measure and measure of achievement readiness. to learn.

Score Interpretation: Scores ranging from 86 to 114 on the Sentiment Quotient are considered average. Scores more deviant than this are seen as significantly extreme (standard deviations and means are provided by age groups). Sentiment quotients are to be interpreted similar to "IQ" as to what is termed a "high" or "low" score. Dependency Stanines are to be interpreted as any stanine, namely scores of 4,5 and 6 are within the average range, while a score of 9 would indicate, for example, extremely "high" dependency.

Reliability: Split-half reliabilities ranged from .76 to .76 for Sentiment Quotients, and from .54 to .78 for Dependency Stanines. No other kinds of reliability coefficients were reported for this instrument. Considering the reliability method (split-half) used for calculation, and the fact that this was calculated on over about 500 youngsters, this should be considered as minimal indication of instrument reliability.

Validity: Varying attempts were made to assess the validity of PASS scores. Correlations of .34 were obtained between PASS and the Screening Test of Academic Readiness, of .44 between PASS and the Metropolitan Readiness Test, and of .127 between PASS and the Screening Test for the Assignment of Remedial Treatment. The authors also mentioned that PASS discriminated among groups rated by teachers along a maturity dimension, and among classes grouped by levels of performance. The validity data should be considered as barely adequate and, considering the age of this instrument and the other validation instruments, validity data should be gathered by any program attempting to use these scores for any practical purposes.

Practical Considerations: The **PASS** administration is a relatively easy group administration which requires about 45 minutes. Since this test is intended for ages from four years four months to seven years three months, a teacher has to be cognizant of those youngsters who are able to use pencil or crayon, able to turn pages of a booklet, and to follow simple instructions. Teachers may have to prepare students in these regards.

Availability: Glen Robbins Thompson, PhD, Northeastern Illinois University, 5500 N. St. Louis, Chicago, IL 60625

Comments: This instrument represents one of few measures of intrinsic motivation for children in this very low age group, and potentially could detect motivational difficulties early on. The picture format and directions are conducive to obtaining valid responses. The major drawbacks of this instrument would be the incompleteness of its technical documentation and its age. Someone wanting to use this measure would probably want to locally validate it.

Title of Instrument: School Attitude Measure ; (1980)

Authors: Lawrence J. Dolan & Marci Morrow Enos

Description: This instrument is a part of the Comprehensive Assessment Program (CAP) developed by Scott, Foresman and Company. The instrument has been marketed by American Testronics since 1983. The School Attitude Measure is an affective survey that assesses student's concepts of themselves as students. Opinions and attitudes are expressed in terms of the academic environment. There are three levels of the survey which span grades four through twelve.

Authors' Description of Subtests: The authors describe five subtests which contain the following constructs:

Motivation for Schooling: These items are concerned with the effect of the students' reactions to past school experience upon motivation in school. Items in this scale had to be related to the student's:

-willingness to participate in current school experience because it is meaningful

-desire to perform competently in future school experience

-perception of the relationship of current schooling to future needs

-willingness to pursue future schooling

-perception of the importance of school relative to other activities

-perception of the way individuals significant to the student view the student's school experience

Academic Self-Concept -- Performance Based: These statements are concerned with the students' confidence in his/her academic abilities and their feelings about their school performance. Items in this scale are related to the student's:

-perception of his/her ability to do majority of school tasks competently

-feeling of importance as a member of his/her class

-reaction to poor performance

-expectation of success

-involvement vs. withdrawal in school tasks

-confidence in his/her own efforts

Academic Self-Concept -- Reference Based: This scale is concerned with how students think other people (teachers, family, friends) feel about the students' school performance and ability to succeed academically. Items in this scale are related to the student's:

-perception of the discrepancy between performance in school and the expectation of others

-perception of the consistency of others' views and one's own expectation

-willingness to discuss school performance with significant others

-comparison of current performance with appropriate reference groups

Student's Sense of Control over Performance: This scale is concerned with students' feelings about being able to exercise control over situations that affect them at school. Items in this scale are related to the student's:

-perception of ability as opposed to luck or fate

-willingness to take responsibility for school outcomes

-awareness of the relationship between actions and outcomes of schooling

-self-reliance and independence in the school setting

Student's Instructional Mastery: Items in this scale ask the students to try to report the state of their actual school skills. They include the student's evaluation of his/her:

-ability to use school time effectively and efficiently

-persistence in instructional tasks

-ability to focus attention or concentrate on instructional tasks

-ability to seek and use feedback

-ability to evaluate his/her own work

Score Interpretation: This instrument may be interpreted on many possible levels -- individual, classroom, grade, school or district. The authors give a lengthy description of interpreting an individual student's profile in terms of:

-focusing on the individual student

-comparing the individual to the group

Additionally, they give examples of comparing:

-classrooms at the same grade

-grade levels from year to year

-specific classes and total grade level samples with national norms

The authors describe the following additional uses for the *School Attitude Measure*:

-identifying individual and group attitudes toward school

-linking school attitude to school performance

-facilitating early intervention

-targeting intervention strategies

-monitoring discrepancies in individual performance

-monitoring long-range school effects

-enhancing student awareness of school outcomes

-assessing Hispanic students who are not fluent in English through the use of Spanish directions

Reliability: Reliability estimates for internal consistency range from .91 to .95 for the total test, and from .80 to .89 for test-retest coefficients for administrations given four weeks apart. These reliability coefficients appear quite satisfactory, especially for this type of instrument.

Validity: According to the authors of the teacher's manual, several validity studies have been completed with this instrument. They claim that the studies suggest strong convergent validity of specific subscales with other instruments that test only one aspect of affective development. Additionally, significant relationships have been shown with both parent and teacher ratings of the students on the *School Attitude Measure* subscales. The authors state that " when the *School Attitude Measure* subscales are linked to the *Comprehensive Assessment Program Achievement Series*, the level of the relationships are consistent with the research literature. Also studies that link the *School Attitude Measure* with observational data and the use of special services have also been undertaken. It appears, then, that these authors have taken seriously the need for various studies of instrument validity. The *degree* to which these studies showed statistically significant relationships is still being investigated, however, and requires specific requests from the authors for such supporting data.

Practical Considerations: Each of the three levels (grade ranges) takes about 35 minutes to administer. Each level has one form available in a non-consumable format. The same machine-scoreable answer sheet may be used with all levels. There are also available combination answer sheets for use with the achievement series or with the *Developing Cognitive Abilities Test*.

Availability: American Testronics, P.O. Box 2270, Iowa City, Iowa 52244

Comments: This is one of the few motivation instruments produced and marketed by a nationally recognized testing company to be administered along with an achievement and/or an aptitude measure, though it could be administered separately. We feel that this technical relationship with these additional measures provides a bonus of information on a student not easily attainable with other instruments. The technical rigor of a major testing company in item development, analyses and investigations adds some attraction to using this instrument as well.

Title of Instrument: The Self-Concept and Motivation Inventory: What Face Would You Wear? (SCAMIN) (1967-77)

Authors: Norman J. Milchus, George A. Farrah, & William Reitz

Description: The authors define "academic self-concept" as how a child views his role as a learner in school -- the sum of experiences, perceptions, attitudes, and feelings about school and schoolwork. "Academic motivation" is defined as the expressed need of a child to achieve a goal in school, and the moderate avoidance of the child toward failure in school. These are the two primary characteristics which this instrument attempts to measure through the use of four subscales: achievement needs, achievement investment, role expectations, and self adequacy. There are four test forms: preschool/kindergarten, early elementary, later elementary and secondary designed with attractive response formats, particularly at the early grade levels. Items are phrased, for example: "What face would you wear if ten years from now you were seeing a movie of yourself as you are now?"

Authors' Description of Subtests: The four subtests mentioned above are defined and categorized in the following manner by the authors.

Elements of Self-Concept

Role Expectations: the positive acceptance of the aspirations and demands that the student thinks significant others expect of him.

Self-Adequacy: the positive regard with which a student views his present and future probabilities of success.

Elements of Motivation

Achievement Needs: the positive regard with which a student perceives the intrinsic and extrinsic rewards of learning and performing in school.

Achievement Investment: the awareness and concern toward shunning the embarrassment and sanctions which are associated with failure in school.

Additional definitions of concepts are given for the following:

- Immediate and Intrinsic Orientation
- Fulfillment Orientation
- Significant Others
- The Self
- Academic Activity and School Climates

Score Interpretation: Using the subscale scores from Achievement Needs, Achievement Investment, Role Expectations and Self Adequacy, the authors define 7 profiles for score interpretation:

High Self-Concept and Motivation Profiles

High scores on both self-concept and motivation infers that the student will continue to strive over the long term. If the student's achievement is lacking, it certainly is not due to a defeatist attitude.

Medium Self-Concept and Motivation Profiles

When all factors are in the medium range, it does not imply that these "average" scores are necessarily acceptable. Some scholars feel that self-concept in general could stand improvement for all school youth.

Low Self-Concept and Motivation Profiles

Low scores on these two dimensions would describe a child who is receiving and expecting little satisfaction from school. The rewards of school seem unobtainable and the self is resigned to suffer discomfort in school.

Anxiety Profile (High Achievement and Low Self-Adequacy)

These anxious youngsters want to achieve and are afraid not to achieve. Inferring such anxiety is particularly valid when the student's actual achievement is average or above.

Denial Profile (Low Motivation with Inflated Self-Concept)

This profile describes a highly defensive self-report which is marked by low motivation and a self-concept higher than achievement levels seem to justify. This student might report indifference or a callous bravado toward avoiding the sanction of failure.

Protection Profile (High Achievement--Medium Self-Adequacy)

Students in this category might be described as:

- having standards that are discouragingly high
- having found self-degradation as a means of gaining sympathy, praise or lower demands.

Security Profile (High Profile with Medium or Low Failure Avoidance

This student has high self-concept and achievement needs but only a moderate or low achievement investment. Usually these students would be above average in achievement and quite self-actualized.

Reliability: Single reliabilities are reported for total scores on each form and *not* for the subscale or profile scores previously defined. These reliabilities range from .77 at the earlier grades to .93 for secondary students. The authors do not report whether these are test-retest or internal consistency coefficients. Since the authors have painstakingly defined four subscore scales and 7 profiles, it is unfortunate that reliabilities have not been reported for these breakdowns. Though the reliabilities of the total scores are quite adequate, interpretability of any subscores must be done with caution because of the inadequacy of reported reliability.

Validity: No empirical validity coefficients are available. Factor analyses have been conducted using two of the four forms, resulting in 3 or 4 factors. More information is needed, however, to validate the existence of the four subscore areas. Construct validity is sadly lacking for an

instrument that has been around for such a long time. The intuitive "face" validity of the items and their subcategorizations seems quite high, however empirical validation is nearly nonexistent.

Practical Considerations: The instrument may be group-administered in 30-45 minutes maximum time. Some stanine "norms" are presented to give a "ballpark" estimate of student performance relative to others in their age group; however, these norms should not be considered nationally representative. The intuitiveness of the subscale categories make interpretation relatively easy.

Availability: Person-O-Metrics, Inc., Evaluation & Development Services, 20504 Williamsburg Road, Dearborn Heights, Michigan 48127

Comments: The item content and format, as well as the subscales described, offer an intuitively appealing measure for both self-concept and motivation. Since motivation to learn seems to involve these two characteristics, this instrument offers the possibility of a neat "combined package" for measurement and subsequent interpretations ... if only there were more empirical validation and reliability information available on the defined scales.

Title: Stern Activities Index (1979)

Author: George G. Stern and Joel Richman

Description: This is a self-administered personality test which provides scores on each of thirty need scales which include measures of intellectual interests, motivation and achievement orientation. There are three forms of this instrument, a 300-item long form and two 91-item short forms. It is intended for use with students that have *at least* a seventh grade reading level, i.e., primarily with high school and college students (& adults).

Authors' Description of Subtests: Items on this instrument are keyed into 12 "first order" scores which are listed below. We will not describe in detail all first order scores (these are in the interpretive manual) but rather we will describe four "second order" scores which are derived from the first order scores. The first order scores which the authors define are:

(1) Self-Assertion
(2) Audacity-Timidity
(3) Intellectual Interests
(4) Motivation
(5) Applied Interests
(6) Orderliness
(7) Submissiveness
(8) Closeness
(9) Sensuousness
(10)Friendliness
(11)Expressiveness
(12)Egoism-Diffidence

Four second order (or "area") scores are defined as combinations of the first order scales as below:

Area I - Achievement Orientation: a high score in this area indicates strong ego strivings, concern for personal achievement and competitiveness. (includes scales Self-Assertion, Audacity-Timidity, Intellectual Interests, Motivation, Applied Interests)

Area II- Dependency Needs: a high score here suggests a generally high level of dependent, submissive, socially-controlled behavior. (includes scales Applied Interests, Expressiveness, Diffidence-Egoism, Orderliness, Submissiveness, Timidity-Audacity, Closeness)

Area III-Emotional Expression: high scores on this factor indicate high levels of social participation and emotional spontaneity, whereas low scores would point toward social isolation and emotional constraints. (includes scales Closeness, Sensuousness, Friendliness, Expressiveness, Egoism-Diffidence, Self-Assertion)

Area IV -Educability: this factor combines elements of both intellectuality and submissiveness producing a dimension of intrinsic interest to the educator. It reflects interest in academic activities coupled with orderliness and conformity. (includes scales Intellectual Interests, Motivation, Applied Interests, Orderliness, Submissiveness)

Score Interpretation: "Norms" are provided for each of the 12 first order scores, indicating what is considered as high or low for each subscore, as well as for the four second order groupings of factors. Suggestions for interpretation of each first order score separately are provided, as well as for the grouped factors as interpreted above.

Reliability: Alpha internal consistency coefficients for the 91-item forms ranged from .61 to .80 for each of the 10-item first order subscales, and from .78 to .85 for the four second order subscales. Reliabilities for the 300-item form were, of course, considerably higher yet. These reliability coefficients are within the satisfactory range (compared with other instruments in its class), and the combined second order scores appear to have greater than average reliability.

Validity: Though no validity information is provided in the user's technical manual, some studies have been conducted showing the rather strong relationship between this instrument and the College Characteristics Index (CCI). The CCI has been shown to be highly related to success in college, however the interrelationships between these measures is not to be found in the literature (Buros, 1972).

Practical Considerations: The long form of this instrument, containing 300 items, takes approximately 40-45 minutes to administer; the short forms, about 20-25 minutes. Hand scoring procedures are well documented in the interpretation manual, though machine scoring and scannable answer sheets are also provided. Sufficient documentation exists for a school counselor to interpret the results of these subscores.

Availability: Instructional Resources Corporation, P.O. Box 545, Skaneateles, New York 13152

Comments: If the primary reason for using this instrument is simply to measure achievement motivation, there are several briefer, more easily interpreted and valid instruments out there. However, if one wishes to measure *several* of the included personality characteristics for a general student profile, it might be worthwhile examining this one. Many local school districts might have specific policies about giving such personality tests, however.

Title of Instrument: Study Attitudes & Methods Survey (SAMS) (1972)

Authors: William B. Michael, Joan J. Michael & Wayne S. Zimmerman

Description: The SAMS was developed to measure non-cognitive factors associated with success in school. It is an easily administered instrument for assessing the dimensions of attitude, motivation and study habits important to academic success. It consists of 150 items which can be responded to in about 30-35 minutes by students in grades 9 through college. The survey has two primary purposes:

- to identify students who might experience difficulty in their school work due to poor study methods or to specific attitudinal factors, and
- to diagnose for purposes of counseling or guidance those areas which might contribute to such difficulty.

Authors' Description of Subtests: A factor analysis of the SAMS instrument produced these six dimensions:

- Academic Interest-Love of Learning: The sheer pleasure gained by students in studying and in doing academic work.
- Academic Drive-Conformity: A combination of persistence, defined as determination to succeed in academic work regardless of the amount of effort and time required, and also a high degree of conformity as it involves meeting institutional requirements.
- Study Methods: A systematic, organized, methodical and well-planned set of working habits and procedures in meeting assignments and in taking examinations.
- Study Anxiety: A marked concern over doing well in school assignments and examinations that reflects a lack of self-confidence and self-assurance.
- Manipulation: An inclination to use power and influence to achieve one's goals and to enhance one's status.
- Alienation Toward Authority: A feeling of being isolated or rejected in the academic environment manifested by hostility toward the academic institution and its members.

Score Interpretation: The authors recommend separate interpretations for each of the subscales as follows:

- Academic Interest-Love of Learning: A high score on this dimension suggests that you can truly enjoy learning new things and that school work "turns you on." A low score suggests that you do not enjoy school work.
- Academic Drive-Conformity: A high score on this scale indicates that you have strong determination to succeed in academic work, regardless of how much time and energy it takes. A low score indicates that you are not willing to put in much time in order to meet the teacher's expectations.
- Study Methods: A high score on this scale represents a systematic, organized, methodical and well-planned set of work habits. A low score would indicate that you are likely to need to spend more time and effort to complete assignments in order to achieve satisfactory grades.

- Study Anxiety: A score that is well below the mid-line on this scale indicates that you have serious concern over doing well in school assignments and examinations. A high score indicates a lack of anxiety or worry over school assignments.

- Lack of Manipulation: A score below a percentile of 20 suggests a tendency to manipulate or to play up to a teacher for the purpose of gaining favorable treatment. A score at centile 50 or greater indicates an absence of manipulative behavior.

- Alienation Toward Authority: If you score above, say, a centile of 80 on this scale, it means that you feel a general satisfaction the rules and regulations involved in assignments and examinations. A score below the 20th centile would imply that you have a tendency to feel rejected or isolated in the school setting.

Reliability: The internal consistency reliabilities of the six separate scales ranged between .83 to .90 for samples of about 300 students. Test-retest (stability) reliabilities were calculated for a sample of about the same size at a four-month interval, and ranged between .68 and .79 across the subscales. These represent quite impressive reliability coefficients, especially compared with other similar instruments we have reviewed on this topic.

Validity: Factorial validity, construct validity and some degree of predictive validity is displayed within the technical manual. As with the reliability data, the authors (researchers) seemed to have taken considerable effort in demonstrating the validity of this instrument. Validity coefficients tended to range between .27 and .40 for the various subscales, not extremely impressive but quite adequate for instruments of this nature.

Practical Considerations: This instrument can be group administered in about 50-55 minutes. A relatively untrained person is able to administer it and, compared with many other instruments in this class, the factor interpretations are somewhat more intuitive easier to explain to the students.

Availability: Educational and Industrial Testing Service (EdITS), P.O. Box 7234, San Diego, CA 92107, (619) 222- 1666

Comments: Compared with most other motivation instruments reviewed, the presentation of information and documentation of the technical manual was superb. This instrument might be an excellent choice in a situation where one might desire a measure of both intrinsic and extrinsic academic motivation.

OTHER MULTIDIMENSIONAL MEASURES

Cognitive Orientation Questionnaire of Achievement (1975) by Hans Kreitler and Shulamith Kreitler is a 45-item set of (primarily forced-choice) questions intended to assess four types of beliefs that may orient an adolescent (ages 15-18) toward achieving behavior. The belief types include Norms, General Beliefs, Beliefs about Self and Goals. Since this questionnaire has been translated from Hebrew, the authors admit that it may be necessary to reword some of the items. The nature of the items (and scoring methods) do not easily lend themselves to assessing quantitative reliability and/or validity coefficients; no validity or reliability data were found for this instrument.

Nach Naff Scale (1976) by Henry Clay Lingren uses thirty forced-choice adjective pairs to provide a measure of need for achievement. It can also be used to assess need for affiliation. The split-half, corrected reliability coefficient with 13 subjects was 0.80, and test-retest stability was 0.88. Other validity studies are reported in the technical documentation accompanying the instrument. By nature, the results of scoring this instrument can primarily be interpreted as "need for achievement" rather than strictly as "motivation to learn."

Self Description Inventory (1975) by Edwin E. Ghiselli consists of 64 pairs of personally descriptive adjectives which provide a measure of: supervisory ability, intelligence, initiative, self-assurance, decisiveness, masculinity-femininity, maturity, working-class affinity, achievement motivation, need for self-actualization, need for power, need for high financial reward and need for security. Outside criterion groups were used for validating each of the subscales; norms (percentile ranks) are provided for each subscale. Intercorrelations between all subscales are given, however no reliability data was found in the technical description.

Teacher Rating Scale (1975) by Gerald Rubenstein is composed of 26 statements in which the teacher is asked whether or not each "apply" or "do not apply" to each student. The instrument is designed to assess the school-related competencies of elementary school-aged children as seen by the teacher. The items are grouped into four factors: cognitive competence, social compliance, motivational orientation and social competence. Test-retest reliability coefficients over a 4-week interval ranged between 0.67 and 0.92 from grade 1 through grade 6. Some validity information, via factor analysis, is also presented in an accompanying technical document.

MOTIVATION-RELATED MEASURES

Title of Instrument: Dimensions of Self-Concept (DOSC) (1984)

Authors: William B. Michael, Robert A. Smith & Joan J. Michael

Description: The DOSC is a self-report instrument which attempts to measure non-cognitive factors associated with self-esteem or self-concept for students in grades 4 through 12. The instrument is composed of 70 items, 14 items in each of five subscales. Students are asked to respond on a 3-point Likert scale describing their likes and dislikes, by marking "never or almost never","sometimes" or "always or almost always."

Authors' Description of Subtests: The authors chose five dimensions of activity judged to be central to a conceptualization of the self concept:

- Level of Aspiration: This factor is a manifestation of behaviors that portray the degree to which achievement levels and academic activities are consistent with perceptions.

- Anxiety: This dimension reflects behavior patterns associated with emotional instability, a lack of objectivity, and an exaggerated concern about tests and the preservation of self-esteem in relation to academic performance.

- Academic Interest and Satisfaction: This factor portrays the sheer love of learning and pleasure gained by students in doing academic work, i.e., intrinsic academic motivation.

- Leadership and Initiative: This dimension represents those behavior patterns that are associated with "star-like" qualities, in which a student has an opportunity to help others, give direction to group activities, to be the respected expert whom others consult, to exhibit the willingness to initiate projects or assignments, etc.

- Identification vs. Alienation: This last dimension represents the extent to which a student feels that he has been accepted as part of the academic community and has been regarded by his teachers and peers as a significant person who is respected for his own worth.

Score Interpretation: An unrealistic *level of aspiration*- either too high or too low- is related to the probable subsequent occurrence of anxiety. Highly anxious students are likely to lose *academic interest*, to fail to acquire a *sense of satisfaction* with their schoolwork, to shun opportunities for *leadership* roles in the school setting, and eventually to develop feelings of *alienation* and rejection toward school. Students who are relatively free of *anxiety*, and who are successful in light of realistic *levels of aspiration*, attain success that engenders *academic interest* and feelings of *satisfaction* with the school experience. Such satisfaction can be anticipated to lead to a high level of self-confidence and academic satisfaction and interest.

Reliability: Internal consistency estimates for each of the five factor scales are given in the technical manual. For each of three samples of examinees in grades 4 to 6, 7 to 9, and 10 to 12, the ranges in reliability estimates across the scales for these three grade groups were .70-.84, .84-.90, and .79-.89 respectively. Based on 14 items per scale and samples of 250-300 students per grade grouping, we judge these reliabilities to be quite satisfactory -- even on the high side.

Validity: To varying degrees, criterion-related, construct and predictive validity was assessed for each of the five factors. Criterion-related validity is reported in great detail using CTBS and ITBS test scores. "Short-term" predictive validity is also reported using grades in various courses

and correlating each of the scale scores with these. Construct validity is touched on much more lightly, with no tables being presented in the technical manual.

Practical Considerations: This instrument can be group-administered by a relatively untrained layperson. Administration time is about 20 to 40 minutes. The results are to be machine-scored by the vendor or through a local licensing agreement. Interpretation of results is fairly straight forward for a teacher or counselor, with clear explanation and norms tables provided in the interpretation manual.

Availability: Educational and Industrial Testing Service (EdITS), Post Office Box 7234, San Diego, California 92107, (619) 222- 1666

Comments: This might be a good bet if one is looking for a well-documented, reliable multidimensional measure of both motivation and self-concept. It should be considered primarily as an "affective" measure of academic motivation (and self-concept) -- measuring only intrinsic motivation and not some of the cognitive aspects of motivation discussed previously.

Title of Instrument: Intrinsic Achievement Responsibility Questionnaire (1965)

Authors: V.C. Crandall, W. Katkovsky & V.J. Crandall

Description: This instrument assesses children's beliefs that they, rather than other people, are responsible for their intellectual-academic successes and failures. It measures internal-external locus of control (defined in the Definitions section of this guide) for purely academic settings and situations.

Authors' Description of Subtests: There are no subtests, only one scale consisting of 34 forced-choice items. Each item stem describes either a positive or a negative achievement experience which routinely occurs in children's daily lives. Each stem is followed by one alternative stating that the event was caused by the child and another stating that the event occurred because of the behavior of someone else in the child's immediate environment. A child's internality-externality rating is obtained by summing the number of internal (I+) responses.

Score Interpretation: The IAR scores were found to not be significantly related to intelligence test scores. They are said to represent either an internal or external motivating propensity which help to account for individual differences in achievement performances. According to the authors, this motivating propensity is not related to sex, intelligence or socio-economic status.

Reliability: Test-retest reliabilities over a two-month interval ranged from .69 to .74. Internal consistencies ranged from .54 to .60 for the internal versus the external response items. These reliabilities are on the low side of being satisfactory for an instrument of this nature.

Validity: As mentioned above, the authors investigated the relationships of IAR scores to intelligence, sex and socio-economic status. Additionally they have controlled for social desirability of responses within the instrument and have examined the *predictiveness* of IAR scores with educational achievement (predictive validity coefficients ranged in the .40s and .50s). Sufficient studies seemed to have been conducted to lend a great deal of *construct* validity to this instrument.

Practical Considerations: The IAR can be quickly administered in less than 40 minutes, hand-scored and interpreted according to the authors instructions.

Availability: Children's beliefs in their own control of reinforcements in intellectual-academic achievement situations. Child Development, 36, 91-109, 1965.

Comments: Of the internal-external control measures this instrument is probably the most appropriate for academic situations. It might be an excellent supplemental measure of a student's motivation to achieve, maybe to be administered along with another motivation measure.

Title of Instrument: Learning Preference Scale For Students (LPSS) (1980)

Authors: Jennifer Barnes, Lee Owens and Ralph Straton

Description: This instrument is but one of a set of three Learning Preference Scales. Other related scales are the Learning Preference Scale - Teachers (LPST) and the Learning Preference Scale - Parents (LPSP). Used separately or in combination the instruments provide systematic information on the attitudes of school students towards cooperative, competitive and individualized learning as it takes place in the classroom. This information may be of use to classroom teachers as they try to suit the mode of classroom activity to student preferences, and to researchers as they investigate the dynamics of learning, especially when considering aptitude - treatment interaction. The student version of this instrument, the LPSS, is composed of 36 items for which a student is asked to indicate "how true or false the statement is for them." This instrument is intended to be used primarily for students in grades 4 through 11.

Authors' Description of Subtests: For Form C of the LPSS the authors have identified 12 subscales. Each of these subscales contains three items, one item for each of the three student modes of learning -- cooperative, competitive or individualized, which have been shown to be relatively independent of one another in the authors' technical documentation. The 12 subscales with brief descriptors are as follows:

- Global Preference: an overall preference for working together with a group, working on one's own, or striving to be best.
- Global Dislike: an overall dislike for working in a particular mode as given above.
- Global Projection: a belief about what "other students" prefer, based on the psychoanalytic concept of projection.
- Positive Work Outcomes: indicating that good quality outcomes will follow from working in a particular mode.
- Negative Work Outcomes: indicating that poor quality outcomes will follow from working in a particular mode.
- Tension: indicating that personal stress is caused by working in a particular mode.
- Altruism: indicating a belief that working in a particular mode is of benefit to others.
- Rate of Progress: indicating that the work gets done quickly in a particular mode.
- The Future: indicating that the experience of working in a particular mode is good preparation for post-school years.
- Individual Differences: indicating that it is helpful to the teacher, in coming to know individual students, by arranging to work with them in a particular mode.
- Unmatched: a set of items unrelated in content.
- Self Sufficiency: indicating that the need for support and recognition by others affects satisfaction with a particular mode.

Score Interpretation: Items representing each of the three learning modes are summed across the 12 subscales to determine the student's primary learning mode. Scores are then interpreted based upon these three learning modes as defined below:

- A *cooperative* goal structure would indicate that students can achieve their own individual goals primarily by working jointly with others.

- A *competitive* goal structure exists when students can achieve their own goals primarily when others fail to achieve their goals(i.e., coming first in a test or a race).

- An *individualistic* goal structure exists when students can achieve their own individual goals no matter what others have chosen to do.

Norms are provided by age and sex for grades 4 through 11 to facilitate interpretation of these three factors. The authors suggest a number of ways in which the results from the LPSS might be used, among which are the following:

- diagnosing the attitudes toward learning of particular students in the class

- comparing the attitudes toward the learning of particular subjects by the same group of students

- the planning of teaching/learning strategies to capitalize on expressed attitudes by individuals, subgroups or the entire class

- contributing to policy decisions in such matters as examination/assessment or innovation in teaching strategies

Reliability: Internal consistency (Cronbach alpha) coefficients are reported for the three "modes of learning" for various grade subgroups. These coefficients range from a low of .66 to a high of .78 within the distinct learning modes and grade subgroups. Test-retest coefficients were also calculated over a two month period of time and ranged from .46 to .58. The internal consistencies of the scales, averaging around .73-.74, could be termed "moderately respectable" for instruments of this nature, whereas the stability (test-retest) coefficients would seem to be lower than what would be desired. Stability estimates over any significant period of time tend to be low for some of these reasons (as quoted from the authors):

> "expressed preferences by students for cooperative, competitive and individualized learning are unlikely to alter over a relatively short period of time, and in fact seem remarkably stable through the course of a single year....as students progress from primary through secondary schooling, however, the LPSS shows clear developmental changes occurring...."

Validity: Initially, the validity of the LPSS was determined through a factor analysis as well as through intercorrelation of the subscales of the LPSS with equivalent subscales on another instrument (MSAA). Divergent validity of the subscales was implied through the independence of each of the three scales using factor analysis results and correlation of subscale scores. The authors seem to have given as much or more effort to assessing instrument validity as for most of the instruments reviewed; they did not, however, report any predictive validity data.

Practical Considerations: This instrument can be administered in 30 minutes or less with relatively little training for the test administrator. Interpretation of the results is facilitated by the manual so that any counselor-type would likely find the scores useable and interpretable.

Availability: Lee Owens, Faculty of Education F09, University of Sidney, Sidney, Australia 2006

Comments: If the aim of the testing with this instrument is to identify alternate learning styles and differing student preferences and adaptations of instructional techniques to these styles is feasible, then administration of this instrument might be preferable. Only in situations such as this, is the payoff of obtaining this measure *in addition to* other measures worth the effort.

Title of Instrument: Learning Styles Inventory: A measure of student preference for instructional techniques (1978)

Authors: Joseph S. Renzulli & Linda H. Smith

Description: This instrument is composed of 65 Likert-type items which are designed to measure student attitude toward nine modes of instruction for students in grades 4 through 12. The types of instruction which the inventory includes are projects, drill and recitation, peer teaching, discussion, teaching games, independent study, programmed instruction, lecture and simulation. Various classroom learning experiences associated with these teaching/learning styles are described and students are asked to respond to each activity along a five point scale ranging from very unpleasant to very pleasant.

Authors' Description of Subtests: After running a factor analysis on data from 700 seventh and eighth students, the following nine factors were identified and described as follows:

- Projects (n=9): The pursuit of school-related activities with a group of students
- Drill & Recitation(n=5): The focus is on the assignment and mastery of content domains
- Peer Teaching (n=3): The degree to which students enjoy being taught material by classmates
- Discussion (n=3): Verbal interchange between teacher and students or between students
- Teaching Games(n=3): Enjoyment of learning through involvement in classroom games
- Independent Study (n=5): Emphasis is placed on students working alone on assignments
- Programmed Instruction (n=4): Students work independently to questions assigned by teacher
- Lecture (n=4): Enjoyment of listening to the teacher explain the lessons
- Simulation (n=3): Suggests active involvement to acquire the subject matter

Score Interpretation: A machine scoring of this measure results in 14 pages of computer printouts for each classroom of students. Seven different profiles of information are presented to the teacher, each with a sample output to assist in interpretation. A brief summary of these profiles and the information they provide follows.

Scores for Individual Students: Each student's score on the nine learning style dimensions is presented in such a fashion that the teacher can compare average responses for each dimension within each student.

Learning Style Preferences of Individual Students: The printout identifies the learning style dimensions in which the student received their two highest and two lowest scores. This profile provides a "quick reference sheet" for highlighting student attitude toward various teaching modalities.

Students Who Find Each Approach in the Pleasant Range: All students who scored 3.51 (out of 5) or above are isolated by learning style preference and listed on a separate sheet. This grouping report may be used by the teacher in accommodating students into small group learning situations.

Students Who Find Each Approach in the Unpleasant Range: This profile is in the same format as the one above, except it isolates students who have responded in the unpleasant range.

Profile of Learning Style Preferences: This profile graphs all students across all learning style preferences and allows for comparison of how many individual students preferred each learning style.

Class Profile of Learning Style Preferences: This profile is a composite of the findings obtained from individual students. All student scores on each dimension are added together and divided by the total number of students, producing a class average profile for each learning dimension.

Profile of Teaching Styles: This report profiles the teachers' instructional styles. This profile can then be compared with the other student and class learning style profiles to observe matching between learning and teaching styles.

Reliability: Internal consistency (alpha) reliabilities were calculated for each of the nine subscales. The range in these reliabilities was from .50 to .77, with the median reliability being about .60. These are not impressive subscale reliabilities and are lower than what would be desired. The primary reason that they are so low is due to the number of items within each of the scales; the authors seemed to recognize this fact and calculated reliabilities had there been more items in each scale. No other reliability coefficients were reported in the interpretive manual.

Validity: Construct validity was reported as the correlations between factor scores and mean scale responses (basically factor loadings), and is displayed in several tables in the reference manual. Predictive validity was examined in great detail by regressions of scale scores on achievement and other motivation (JIM scale) and interest (GRASS scale) scale scores. Generally, the learning style variables together were significant predictors of each of these other sets of scores. The investigation of validity seemed to be extremely comprehensive.

Practical Considerations: This instrument may be group administered in about 30 minutes. Because of the number of profiles available through scoring, it should be machine scored only. Teachers of primary grade students should consider reading the items to students and completing the instrument in two sessions; the instrument is primarily intended for grades 4 through 12, however.

Availability: Creative Learning Press, Inc., P.O. Box 320, Mansfield Center, Connecticut 06250.

Comments: As a motivation-*related* instrument this one seemed to be well researched and technically validated, down to the point of statistically showing its relationships to other *motivation* and achievement instruments. If a person were not simply wanting to measure motivation alone, and happened to have an interest in teaching-learning style match, this might be an excellent choice for such information.

Title of Instrument: School Motivation Analysis Test (SMAT) (1970)

Authors: Arthur B. Sweeney, Raymond B. Cattell & Samuel E. Krug

Description: The SMAT is presented as an objective measure of 10 dynamic source traits which, when combined in a certain fashion, form a student's total motivational system with regard to school activities. It is intended to be administered to students aged 12 to 18 years and requires a relatively high degree of psychological training for interpretation. The test may be used in schools, guidance centers and any institution with youth of this age group; it is primarily to be regarded as a professional assessment device centered about dynamic motivation systems found in basic and clinical personality research.

Authors' Description of Subtests: The authors identify 10 "dynamic" personality traits related to motivation at these age levels:

(1) assertiveness
(2) mating (sex)
(3) fear
(4) narcissism
(5) pugnacity-sadism
(6) protectiveness (pity)
(7) self-sentiment
(8) superego
(9) school
(10) home

Responses on each of these traits is classified as *Integrated* (the deliberate, organized aspects of motivation) or *Unintegrated* (the unconscious aspects of motivation). Subscore interpretations are given for integrated and unintegrated components of motivation according to the following breakdown:

- Integrated-Word Association: associations of cue words in the direction of interests
- Integrated-Information: matters which assist means-ends activities in reaching the goals of interest
- Unintegrated-Utilities: the person's first reaction about what various resources could be used for -- close to a simple preference test
- Unintegrated-Autism: distortion of the cognitive field by misperception and misbelief -- favors realization of the individual's own interests and goals.

Granted, some of the information in the interpretation manual may seem to be a bit esoterically stated, however the authors are quite "up front" about the results being *interpreted* by a licensed psychologist type of person.

Score Interpretation: The integrated and unintegrated scores on each of the 10 dynamic traits are called *primary scores*. Certain combinations of these primary scores generate other indices which may be useful in interpreting an individual profile. Adding the integrated and unintegrated scores together for any single trait gives an index of how much overall energy investment there is in that area. This is called the *total motivation* score for that area. The authors also provide an interpretation for the differences between the integrated and unintegrated scores on each of the primary traits as *conflict* scores in each area. Conflict scores represent the excess of drive over satisfaction. Together the *total motivation* and *conflict* scores make up secondary scores which can be interpreted in addition to the 10 primary scores. The authors provide detailed interpretations for these 40 different scores available from the SMAT.

Reliability: Test-retest reliabilities are provided for each of the primary and secondary trait scores (a total of 40 coefficients in all). The range of these reliabilities is from .47 to .85, with a median around .60. The authors highlight the fact that reliabilities of motivation scales are generally lower than those of most personality or ability scales; we have also noted that this has been the case with the instruments that we have reviewed. K-R 20 internal consistency coefficients were also calculated for the five derived scores: total autism-optimism, general information-intelligence, total integration, total personal interest and total conflict. These coefficients ranged from .86 to .94 -- some of the highest internal consistency we have seen for motivation instruments.

Validity: Some "construct" validity coefficients were calculated by correlation of primary scale scores with the 10 pure factors (factor loadings, in a sense). These correlations averaged around .85, which is to be expected if the factors are essentially equivalent to the primary traits. Some predictive validity studies are reported relating SMAT scores to achievement and IQ test scores. The SMAT scores were found to be a significant predictor of achievement in themselves however, when added in with IQ scores, the predictive validity coefficients were quite impressive -- with a median validity coefficient over .70. Other construct validation studies have been conducted relating the SMAT to self-concept, self-sentiment and other motivation-related instruments. The attempts made by the authors (and others) to validate this instrument were quite impressive indeed, and probably as thorough as for any other instrument reviewed in this guide.

Practical Considerations: The SMAT may be group administered in three parts requiring a total of about 50-60 minutes testing time. The results must be hand-scored. As we have mentioned before, however, the interpretation of results should be in the hands of a trained psychologist.

Availability: Institute for Personality and Ability Testing,Inc., P.O. Box 188, Champaign, Illinois 61820

Comments: This instrument seems to be a very thorough and objectively valid measure of several personality traits which are related to, and part of, motivation *in general*. In a sense, it is a measure of motivational *components* or correlates, rather than a "pure" intrinsic or extrinsic measure of academic motivation, however its relationship to, and predictiveness of, school achievement appears to be as strong as for any of the instruments we reviewed.

Title of Instrument: The TLC Learning Preference Inventory (1980)

Authors: Harvey F. Silver and J. Robert Hanson

Description: The TLC is a Jungian-based instrument which is designed to assist teachers in the task of identifying individual student learning preferences or styles. It is said to be a diagnostic assessment of how the student perceives himself as a learner. It also provides insights into the student's orientation or attitude toward things or ideas in his world -- Jung's terms of *introversion* and *extroversion*. This instrument is intended to provide the teacher with important information for making daily decisions about how students may best learn.

Authors' Description of Subtest: The authors describe four attitudinal dimensions -- sensing, intuiting, thinking and feeling -- which tend to modify perception and judgment functions of students. Sensing and intuiting make up a perception dimension, whereas thinking and feeling fall into a judgment dimension. A third dimension, introversion-extroversion, is a process which mediates ideas during and after perception and judgment functioning. The authors describe a process which applies Jung's theory on these personality types to the teaching-learning act, which provides the practitioner with a new and highly practical set of terms and definitions for analyzing and describing how one learns. The authors describe four categories of learners for which interpretations will lead to certain instructional strategies:

- Sensing-feeling Learners: can be characterized as sociable, friendly, and interpersonally oriented. This type of learner is very sensitive to people's feelings, his own and others. He prefers to learn about things that directly affect people's lives rather than impersonal facts or theories.

- Sensing-thinking Learners: can be characterized as realistic, practical and matter-of-fact. This type of learner is efficient and results-oriented. He prefers actions to words and involvement to theory. He has a high energy level for doing things which are pragmatic, logical and useful.

- Intuitive-thinking Learners: can be characterized as theoretical, intellectual and knowledge-oriented. This type of learner prefers to be challenged intellectually and to think things through for himself.

- Intuitive-feeling Learner: can be characterized as curious, insightful, imaginative and creative. This person dares to dream, is committed to his values, is open to alternatives and constantly searches for new and unusual ways to express himself.

Score Interpretation: The authors detail instructional strategies which work best for these four learner types. Score ranges are provided for interpreting "the type" of learner classifications. A *major* plus for this particular instrument is the learning-instructional strategies connection which is clearly documented in the interpretation manual.

Reliability: The authors report inter-item correlations and results from a factor analysis (see Validity section below) in a 1984 American Educational Research Association paper, however no direct reliability coefficients are reported.

Validity: Factor analyses have been conducted on data from the LPI and have validated the existence of the four major categories of items mentioned above. The combination of these factors have accounted for more than 70% of the original test score variance.

Practical Considerations: This instrument may be administered within a class period and has procedures for either hand or machine scoring. Interpretation of the scores is quite intuitive and logical so that the average counselor (in many cases even the teacher) is able to work with the results with little difficulty.

Availability: Hanson Silver and Associates, Box 402, Moorestown, NJ 08057

Comments: The intuitiveness of the scales on this instrument make it quite appealing. I would venture to say that *most* people who examine these scales could easily place themselves into one of the four categories of learners -- a good sign of at least *face validity*. The connection between each type of learner and specific instructional strategies is unusually good for learning styles instruments.

OTHER MOTIVATION-RELATED MEASURES

Adjective Check List (1952) by Harrison G. Gough is a list of 300 adjectives which the rater or ratee checks as being applicable to them. This instrument is useable especially with learning disabled students, however with average students it is useable as a measure of self-concept, personal adjustment, achievement, self-control and aggression. Test-retest reliabilities range from 0.64 to 0.84 and interrater reliabilities range from 0.60 to 0.70. Minimal construct validity information is reported in the accompanying technical literature relating these scales to those on the California Psychological Inventory. The major drawback of this instrument is the age of all technical information.

Fear of Success Scale (1973) by Miron Zuckerman consists of 27 Likert-scaled items which describe the benefits of success, the costs of success and the respondent's attitudes toward success when compared to other alternatives. No technical information is provided in the accompanying manual, however several studies have been conducted using this instrument in the research literature.

Inferred Self-Concept Scale (1973) by E.L. McDaniel, PhD is available through Western Psychological Services. This is a 30-item instrument intended for students in grades 1 through 6, where the teacher rates his/her perception of the student on 30 characteristics. Considerable reliability data, averaging 0.80 to 0.95, and validity data are provided.

Nowicki-Strickland Locus of Control (1973) by Stephen Nowicki, Jr. is based on Rotter's definition of internal-external locus of control (as described in the Definitions section of this document). It consists of 40 forced-choice questions which are answered yes or no as to whether a student (3rd to 12th grade) feels they are applicable to him/her. The items describe reinforcement in a variety of areas, such as affiliation, achievement and dependency and may best be described as a generalized expectancy for control in children, rather than control as it purely relates to academic achievement. Test-retest reliabilities ranged from 0.63 to 0.71; split-half internal consistencies ranged from 0.63 to 0.81 (across grade levels). Numerous studies have shown the relationships between this instrument and need for achievement, as well as with achievement itself.

Rotter Internal-External Control Scale (1976) by J.B. Rotter is a 23-item forced-choice scale where the respondent is asked to choose the statement that they feel is most true of them. Because the scale samples a variety of situations, it can be said to be a measure of generalized expectancy of success or failure in a number of social situations, both academic and non-academic. Such expectancies have been shown to be related to both self-concept and learning motivation. The Rotter is probably the most used measure of internal-external locus of control for varied situations, as opposed to the IAR Scale (1965) which applies only to academic achievement areas. Internal consistency of the Rotter ranged from 0.65 to 0.79 and test-retest reliability ranged from 0.50 to 0.83, depending on the time interval involved.

Student Opinion Questionnaire (1976) by Larry Johnson is a 93-item Likert-style instrument which is intended to be used primarily with students in grades 7 through 12. Subscales on this instrument include self-concept, liking of school, interest in learning, perceptions of progress in learning among several other scales. Many of these scales are directly related to motivation in school; however, because the instrument was only locally-normed (in Minneapolis), anyone wanting to use (and interpret) the resulting scores would probably need to collect their own locally-relevant technical data

APPENDIX B

SUMMARY TABLE OF

MOTIVATION MEASURES

SUMMARY TABLE OF PRIMARILY MOTIVATION MEASURES

INSTRUMENT	Area of Focus	Grade Levels	No. of Forms/ levels	No. of scales	No. of Items	Adm. Time	Scoring Methods
Aberdeen Academic Motivation Inventory (1967)	academic vs. achievement motivation	secondary school students	1/1	1	24	20-30 min.	hand
Children's Academic Intrinsic Motivation Inventory (1986)	intrinsic motivation in five subject areas	4-8	1/1	5	44	20-30 min.	hand or machine
Children's Achievement Motivation Scale	achievement motivation	1-9	1/1	1	20	20-30 min.	hand
Intrinsic Intellectual Motivation Scale (1984)	intrinsic intellectual motivation	secondary students	1/1	1	44	30 min.	hand
JIM Scale (1965)	motivation toward school	7-12	1/1	1	80	45-50 min.	hand
Measure of Achievement Motivation (1975)	adult achievement motivation	secondary students & adults	1/1	14	106	30-40 min.	hand
Ontario Test of Intrinsic Motivation (1971)	intrinsic academic curiosity	secondary school student	1/1	2	110	46-60 min.	hand
Opinion Reaction Inventory (1985)	achievement motivation	secondary students and adults	1/1	14	106	30-40 min.	hand
PPP School Sentence Form (1973)	feelings about school	1-6	1/1	5	20	20-25 min.	hand
Revised Children's Reactive Curiosity Scale (1982)	continuing intrinsic motivation	secondary school students	1/1	1	40	35-40 min.	hand
A Scale of Intrinsic vs. Extrinsic Orientation in the Classroom (1981)	intrinsic vs. extrinsic motivation	3-9	1/1	5	18	30-40 min.	hand
Student Motivation Questionnaire (1987)	intrinsic vs. expectancy vs. motivation to learn	3-9	1/1	4	46	30 min.	hand

Score Interpretation	Reliability	Stability	Validity	Address of Availability	Review
fair	no info	good	no info	Academic Motivation and School Attainment. British Journal of Educational Psychology, 38, 181-188, (1968)	short
good	good	fair	good	Psychological Assessment Resources P.O. Box 998 Odessa, FL 33556	long
poor	no info	no info	no info	ETS Test Collection Tests in Microfiche (#008457) Princeton, NJ 08541-0001	short
good	good	no info	no info	Dr. Lloyd Barenblatt Department of Organization Administrative Studies New York University 300 East Building New York, NY 10003	long
fair	fair	poor	good	ETS Test Collection Tests in Microfiche (#004021) Princeton, NJ 08541-0001	short
good	poor	poor	no info	ETS Test Collection Tests in Microfiche (#009367) Princeton, NJ 08541-0001	long
fair	no info	no info	no info	H.I. Day, Ph.D. 102 Bloor Street West Toronto 5, Ontario	short
good	poor	fair	no info	Dr. John C. Ory Measure and Evaluation Division 307 Engineering Hall 1308 W. Green Urbana, IL 61801	long
fair	no info	no info	no info	ETS Test Collection Tests in Microfiche (#008484) Princeton, NJ 08541-0001	short
fair	no info	no info	no info	An item-level analysis ... (1986) Amy, Susan. University Microfilms 300 N. Zeeb Road Ann Arbor, MI 48106	short
fair	fair	no info	poor	Susan Harter, Ph.D. 2040 S. York Street University of Denver Denver, CO 80208	long
fair	no info	poor	no info	Dr. Jere Brophy Michigan State University Institute for Research on Teaching College of Education East Lansing, MI 48824-1034	long

SUMMARY TABLE OF MULTI-DIMENSIONAL MEASURES

INSTRUMENT	Area of Focus	Grade Levels	No. of Forms/ levels	No. of scales	No. of Items	Adm. Time	Scoring Methods
Cognitive Orientation Questionnaire of Achievement (1975)	beliefs toward achieving	9-12	1/1	4	45	30-40 min.	hand
My Education in Science (1983)	intrinsic, ability, socioeconomic locus of control	5-8	1/1	6	61	50-60 min.	hand
Nach Naff Scale (1976)	need for achievement	secondary and adults	1/1	1	30	30-40 min.	hand
Primary Academic Sentiment Scale (1968)	motivation to learn, level of maturity, parental independence	pre-k to grade 1	1/1	2	38	45 min.	hand
School Attitude Measure (1980)	attitude toward school generally	4-12	3/3	5	75, 85, 100	35-40 min.	machine
The Self-Concept and Motivation Inventory (1967-77)	academic self-concept and motivation	pre-k to 12	4/4	4	varies, 24 to 64	30-40 min.	hand, machine
Self-Description Inventory (1975)	ach motivation initiative, and others	secondary school students	1/1	13	64	40-50 min.	hand
Stern Activities Index (1979)	motivation, intellectual interest, achievement, motivation	7-16	3/1	30/4	91 300	40-25 min.	hand machine
Study Attitudes and Methods Survey (1972)	(affective) attitudes, motivation study habits	9-12, college	1/1	6	150	30-35 min.	hand, machine
Teacher Rating Scale (1975)	school related competencies	1-6	1/1	1	26	20-30 min.	hand

Score Interpretation	Reliability	Stability	Validity	Address of Availability	Review
fair	no info	no info	no info	ETS Test Collection Tests in Micro-fiche (#922002) Princeton, NJ 08541-0001	short
fair	fair	fair	fair	Ms. Margaret E. Uguroglu Devry, Inc. 2201 W. Howard Evanston, IL 60202	long
fair	good	good	poor	ETS Test Collection Tests in Micro-fiche (#008332) Princeton, NJ 08541-0001	short
good	fair	no info	poor	Glen Robbins Thompson, Ph.D. Northeastern Illinois University 5500 N. St. Louis Chicago, IL 60625	long
good	good	good	fair	American Testronics P.O. Box 2270 Iowa City, Iowa 52244	long
good	fair	no info	poor	Person-O-Metrics, Inc. 20504 Williamsburg Road Dearborn Hgts, MI 48127	long
fair	no info	no info	poor	ETS Test Collection Tests in Micro-fiche (#004017) Princeton, NJ 08541-0001	short
good	fair	no info	poor	Instruction Research Corp. P.O. Box 545 Skaneateles, NY 13152	long
good	good	fair	fair	Educational and Industrial Testing Service P.O. Box 7234 San Diego, CA 92107	long
fair	no info	fair	poor	ETS Test Collection Tests in Micro-fiche (#007828) Princeton, NJ 08541-0001	short

SUMMARY TABLE OF MOTIVATION-RELATED MEASURES

INSTRUMENT	Area of Focus	Grade Levels	No. of Forms/ levels	No. of scales	No. of Items	Adm. Time	Scoring Methods
Adjective Checklist (1952)	self-concept, achievement, aggression, self-control, personal adjustment	9 to college	1/1	18	300	15-20 min.	hand, machine
Dimensions of Self-Concept (1984)	self-esteem, self-concept	4-12	2/2	5	70	30-40 min.	hand, machine
Fear of Success Scale (1977)	attitudes toward success	7-12	1/1	1	27	20 min.	hand
Inferred Self-Concept Scale (1973)	teacher rates self-concept	1-6	1/1	1	30	20-25 min.	hand
Intellectual Achievement Responsibility Questionnaire (1965)	academic locus of control	4-12	1/1	3	34	30-40 min.	hand
Learning Preference Scale for Students (1980)	cooperative, competitive, individualized	4-11	2/1	14	42	30 min.	hand
Learning Styles Inventory (1978)	nine learning styles	4-12	2/1	9	65	30 min.	machine
Nowicki-Strickland Locus of Control (1973)	generalized locus of control	3-12	1/1	1	40	30-40 min.	hand
Rotter Internal-External Control Scale (1976)	generalized expectancy	3-12	1/1	1	23	25-30 min.	hand
School Motivation Analysis Test (1970)	10 personality traits	7-12	2/1	10	100	50-60 min.	machine
Student Opinion Questionnaire (1976)	self-concept, interest in school, interest in learning, etc.	7-12	1/1	9	93	40-50 min.	hand
The TLC Learning Preference Inventory (1980)	Jungian personality traits	4-11	1/1	4	144	40-50 min.	hand

Score Interpretation	Reliability	Stability	Validity	Address of Availability	Review
fair	fair	good	no info	Consulting Psychologists Press 577 College Avenue Palo Alto, CA 94306	short
excellent	good	no info	good	Educational and Industrial Testing Service P.O. Box 7234 San Diego, CA 92107	long
fair	no info	no info	no info	Mr. Miron Zuckerman Department of Psychology University of Rochester Rochester, New York 14627	short
good	good	no info	poor	Western Psychological Services 12031 Wilshire Boulevard Los Angeles, CA 90025	short
good	poor	fair	good	Children's beliefs in their own control of reinforcement in intellectual-academic situations. Child Development, 36, 91-109 (1965)	long
good	fair	fair	fair	Mr. L. Owens Faculty of Education F09 University of Sidney Sidney, Australia 2006	long
excellent	fair	no info	good	Creative Learning Press, Inc. P.O. Box 320 Mansfield Center, CT 06250	long
good	fair	fair	good	ETS Test Collection Tests in Micro-fiche (#006839) Princeton, NJ 08541-0001	short
good	fair	fair	good	Generalized expectancies for internal vs. external control of reinforcement. Psychological Monographs, 80, No. 609 (1966)	short
good	excellent	no info	good	IPAT, Inc. P.O. Box 188 Champaign, IL 61820	long
fair	no info	no info	no info	Mr. Lary Johnson Minneapolis Public Schools Minneapolis, MN	short
good	no info	no info	no info	Hanson Silver and Associates Box 402 Moorestown, NJ 08057	long

Value Judgments for Reliability and Stability

No Info	No information was found
Poor	Reliability coefficients were generally below .70
Fair	Some reliability coefficents were greater than .70
Good	Reliability of total instrument greater than .85 or most subtest reliabilities greater than .75
Excellent	Total instrument reliability greater than .90 and/or most subtest reliabilities greater than .80

Value Judgments for Validity

No Info	No information was found
Poor	Validity coefficients are generally less than .40
Fair	Validity coefficients range from .40 to .50
Good	More than one method used; coefficients average .50 or above
Excellent	More than one method used; coefficients average .60 or above

APPENDIX C

TESTING RESOURCES

AND BIBLIOGRAPHIES

RESOURCES

BOOKS AND ARTICLES

Primarily Motivation

Ames, R. & Ames, C. (Eds.) (1984). Research on motivation in education, vol 1. New York: Academic Press.

Coopersmith, S. (1975). Developing motivation in young children. San Francisco: Albion Publishing.

Deci, E.L., and Ryan, R.M. (1985). Intrinsic motivation and self-determination in human behavior. New York: Plenum Press.

Fyans, Jr., L.J. (Ed.) (1980). Achievement motivation: Recent trends in theory and research. New York: Plenum Press.

Maehr, Martin L. (1986) (Series Ed.). Advances in motivation and achievement. Vol.5:Enhancing motivation. Greenwich, Conn: JAI Press Inc..

Nicholls, John (1984) (Ed.). Vol 3: The development of achievement motivation. From Advances in motivation and achievement. Greenwich, Conn: JAI Press Inc.

Paris, S.G., Olson, G.M., & Stevenson, H.W. (1983). Learning and motivation in the classroom. Hillsdale, New Jersey: Erlbaum Associates.

Sorrentino, R.M., and Higgins, E.T. (1986). Handbook of Motivation and Cognition. New York: Guilford Press.

Wlodkowski, R.J. (1985). Enhancing adult motivation to learn. San Francisco: Jossey-Bass.

Wlodkowski, R.J. (1986). Motivation. From What research says to the teacher. Pamphlet series of the National Education Association, Washington, D. C..

Motivation-Related

Lefcourt, H.M. (1982). Locus of control: Current trends in theory and research. Hillsdale, New Jersey: Erlbaum Associates

Phares, E.J. (1976). Locus of control in personality. Morristown, New Jersey: General Learning Press.

BIBLIOGRAPHIES

Primarily Motivation

Motivation and Need Assessment Bibliography (1985). Princeton, New Jersey: ETS test collection. An extensive, abstracted listing of instruments that measure motivation-related constructs. Listings are coded by ETS test collection codes and a majority are on microfiche for easy retrieval and examination.

Task Orientation (1987). Princeton, New Jersey: ETS test collection. A coded, abstracted listing of instruments related to task orientation (primarily classroom-related). There are not nearly as many direct motivation instruments listed in this bibliography as in the 1985 ETS bibliography above, however we did find a few *related* measures which might be administered along with a motivation instrument.

Student Discipline and Motivation: Research Synthesis (1982). Kathleen Cotton & William G. Savard. Northwest Regional Educational Laboratory, Portland Oregon. Provides synopses and evaluative information on over 30 studies (primarily research articles) on student motivation and discipline. As part of a school effectiveness effort, these synopses are within with a teacher audience in mind.

Motivation-Related

The Seventh Mental Measurements Yearbook (2 volumes) (1972) Oscar Kristen Buros (Ed.).Institute of Mental Measurements, Lincoln, NE. Also the Eighth Mental Measurements Yearbook (1978) classifies most of these instruments under "personality" testing, however because of the variation among motivation instruments, it is usually easier to look in these volumes under the Index of Test Titles. Reviews and some technical information is provided on many of the instruments discussed in this document.

The Ninth Mental Measurements Yearbook (2 volumes) (1985) James V. Mitchell, Jr. (Ed.). The same reference as above but contains descriptions of more recent instruments -- up through 1984.

Self-Concept Measures: Head Start Test Collection (1973). Pamela Rosen. Educational Testing Service, Princeton, N.J. Test Collection (ERIC ED 086737). This annotated bibliography lists forty-four instruments measuring self-concept that were published between 1963 and 1972. Most of these instruments are appropriate for use with children from the pre-school level through the third grade.

APPENDIX D

CHECKLIST FOR SELECTING A

MOTIVATION TO LEARN INSTRUMENT

Checklist for Selecting a Motivation to Learn Instrument

I. *Usefulness*

A. **Relevance of Information**

1. Is this instrument intended for the grade levels and type of students whom you wish to measure?

2. Do the stated uses of the scores in the interpretation manual agree with your intended use(es) (e.g., to predict achievement, etc.)?

3. Does the instrument measure the primary motivation areas on which you want information (e.g., academic or subject-specific, intrinsic, etc.)?

4. Does the interpretive manual provide norms, or at least performance bands, by which to judge a student's performance for a particular grade level?

B. **Ease of Administration**

1. Is the instrument sufficiently easy to administer (e.g., training for administration, group-administered)?

2. Is the testing time the appropriate length?

3. If it is hand-scored, is the scoring and interpretation method clear?

C. **Costs**

1. Are the costs of the materials, training, and scoring reasonably within reach?

2. Are the additional costs of administration worth it for the benefits derived?

II. *Technical Adequacy*

A. **Materials Provided**

1. Is the technical/interpretive manual sufficient for your needs (norms, interpretive examples, etc.)?

2. Are the administration instructions perfectly clear?

3. If hand-scored, are the scoring, interpretation instructions clear enough for you to complete this process?

B. **Reliability**

1. Is there pilot and/or normative information available for subscores, total scores or items?

2. Do the manuals show the reliability coefficients for subscale scores and/or total scores (internal consistencies, test-retest, interrater)?

3. Are the reliabilities within a reasonable range? (for these instruments .60-.80 is common)

a. "reasonable" depends on purpose; if only a supplemental measure, lower reliabilities (.60-.80) may be accepted than if used for predictive purposes. For more important uses such as placement information into special programs reliability coefficients should be above .90.

b. reliabilities should be compared between tests which are in close competition for acceptance.

C. **Validity**

1. Do the items have *face* validity in terms of what you want to measure? If you have particular objectives for your measurement, do the items appear to have *content* validity with those objectives (e.g., if you want to predict achievement in science, do the items appear to measure motivation relevant to the academic area of science?) Has the item content been reviewed by experts?

2. Is there some form of factorial validity reported for the subscales?

3. Do the technical materials show correlations between the scores on this instrument and other measures of motivation?

4. If predicting achievement is one of your goals, do the manuals show some degree of predictive validity?

5. Is there any other evidence that scores on this instrument are highly related to other indications of motivation (e.g., teacher ratings of motivation, etc.)

6. Is there evidence that students would understand what is being asked?

7. Is there evidence that students provide honest responses and not simply what is socially desirable or what they feel the school wants to hear? What controls have been taken to assure this?

8. Is the instrument based on some theoretical model or simply a collection of items?

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School Attitude Measure 31
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